Mass Communication Design for Assam Tea Plantation Workers

Thesis submission in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

Suresh Goduka

Roll No. 196105009

Under the Supervision of

Professor Amarendra Kumar Das

Department of Design

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI

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Dedicated

to the 200 years of

Assam Tea

(1823-2023)

Declaration

I, Suresh Goduka, declare that the PhD thesis "**Mass Communication Design for Assam Tea Plantation Workers**" contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Place: IIT Guwahati **Suresh Goduka**

Date: **Roll No.** 196105009

Department of Design
Indian Institute of Technology Guwahati (IITG)

Certificate of Authenticity

I certify that this thesis entitled "Mass Communication Design for Assam Tea Plantation Workers" submitted in partial fulfilment of the requirements for the Degree of Doctor of Philosophy at Indian Institute of Technology Guwahati has been carried out under my supervision and is a bonified work of Mr Suresh Goduka.

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Place: IIT Guwahati
Date:

Amarendra Kumar Das, PhD
Thesis Supervisor
Professor, Department of Design
Indian Institute of Technology Guwahati (IITG)
Guwahati-781039, Assam, India

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Abstract

This research evaluates the effectiveness of mass communication campaigns among the tea plantation worker communities in Assam, the world's largest tea-growing region. These workers play a significant role in global tea production. They are a heterogeneous mixture of about a hundred tribes and castes originating from different parts of India. They exhibit a rich diversity in respect to language, tradition, culture and social background, and are known collectively as the Tea Tribe in Assam. Since the era of British tea planters, they have settled in the close-quartered tea garden colonies. This isolation has led to unique socio-cultural dynamics within these communities, which presents both challenges and opportunities for mass communication.

This research includes a field survey to measure the effectiveness of different mass media tools among the Assam tea plantation worker communities. The findings indicate that the reach and effect of the mass media tools among the population under study have been poor. This suggests a pressing need for a new approach that can effectively bridge the communication gap.

In response to this need, the research work proposes a novel framework for mass communication design. It included designing alternative media tools, which were tested for usability among the target population. The testing process involved projective technique with recorded feedback.

The findings from these tests are presented as recommendations and guidelines for designing messages, ensuring optimal effectiveness, of mass campaigns among marginalized communities, such as the Assam tea plantation workers. It considers the unique socio-cultural dynamics of these communities and seeks to create communication strategies that resonate with their experiences, capacity and context. The recommendations were validated by the producers of mass communication campaigns.

This research underscores the need for adequate context-based designing of mass communication, addressing the unique communication needs of diverse communities.

The research work may help in developing future models focusing on mass communication mediated by design interventions.

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Abbreviations

CTML	Cognitive theory of multimedia learning
ICT	Information and communication technologies
ISRII	International society for research on internet interventions
ITA	Indian Tea Association
NCBC	National Commission for Backward Classes
SMOG	Simple Measure of Gobbledegook
SPSS	Statistical Package for Social Sciences
TRA	Tea Research Association
WHO	World Health Organisation
ELM	Elaboration Likelihood Method
FOG	*Gunning Fog* Index
HSV	Hue, Saturation, Value
IITG	Indian Institute of Technology Guwahati
OBC	Other Backward Classes
OSROR	*Orientation-Stimulus-Reasoning-Orientation-Response*
UNICEF	United Nations Children's Fund
US	United States of America

Glossary

Communication Design: Design efforts with communication objectives.

Visual Communication Design: Design applications in communication using visual channels.

Mediated Communication: Communication that mediates through interaction between screens, spaces and persons.

Mass Communication: Communication directed to the mass people.

Tribe: A social group of distinct people, dependent on their land for their livelihood, who are largely self-sufficient, and not integrated into the national society (Ministry of Tribal Affairs, Government of India)

Garden show: Special screenings of cinema under the open sky at night for the tea plantation workers during festivals

Haria: A local word for alcohol made from rice

Sulai: A local word for alcohol made from objects like sandal, rotten jaggery etc.

Colour blindness: Defective colour vision that results in colour identification confusion.

Interference of light: The colour reaction caused by changing the viewer's position; the blocking of some light or illumination by another object; or a weather condition.

Natural order: Using a black background and sequencing to grey and then white, or having a white background and sequencing to grey and then black.

Symmetrical balance: Balance that relies on a "mirror image" of design components, in which both sides of the work are equal.

Visible spectrum: The range of colours that can be perceived by the human eye.

List of Publications

1. Goduka S., Das A.K. (2021): Design-audited mass communication model. In: Chakrabarti A., Poovaiah R., Bokil P., Kant V. (eds) Design for Tomorrow—Volume 2. Smart Innovation, Systems and Technologies, vol. 222. Springer, Singapore. https://doi.org/10.1007/978-981-16-0119-4_36
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4. Goduka, S., Das, A. K. (2024). Mass Communication Tools: Exploring Effectiveness for Assam Tea Worker Community. *Journal of Advanced Research in Journalism and Mass Communication*, 11(1), 12-24.
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CHAPTER 1: Preface

1.1 Introduction and Research Context

The Assam tea industry in Northeast India engages approximately 4 million individuals. They are descendants of nearly 100 tribal communities that migrated from various regions and are presently known collectively as the tea tribe.

1.2 The Global Tea Landscape

Tea holds the distinction of being one of the most consumed beverages globally, second only to packaged water (Bolton, 2019). Every day, the world consumes five billion cups of tea (UKTIA, 2023).

As the world's largest producer and consumer of tea, India contributes approximately 27% to global production (Khullar, 2006). Most of the world's tea is harvested from two primary varieties, Camellia sinensis var. sinensis and C. s. var. assamica. The latter variety is named after Assam.

1.3 The Origins of Tea

1.3.1 The Legend and the Beginning

The term 'Tea' originates from the Chinese Fukien dialect (Boruah, 2006). According to legend, Chinese Emperor Sheh Nung discovered tea in 2737 BC when a leaf from a wild tea plant fell into his bowl of boiling water while he was in a garden. Archaeological evidence of tea consumption dates back to the Han dynasty (206 BC - 220 AD), with tea containers found in tombs from this period. In 780 AD, Lu Yu, a Chinese writer, penned the first book dedicated entirely to tea, the Ch'a Ching, or Tea Classic. Shortly after this, tea was introduced to Japan by Japanese Buddhist monks who had visited China for their studies (UKTIA, 2023).

1.3.2 Tea in Europe

In the initial years of the 17th Century, tea was brought to Europe by Dutch Merchants. The first public offering of tea in London was at Garraway's Coffee House in 1657, and it quickly gained popularity in England. The British East India Company started importing tea from China in 1689. By the year 1700 AD, tea had established itself as a prominent non-alcoholic beverage in numerous countries. During this period, tea was commonly used to alleviate various ailments such as depression, headaches, eye discomfort, joint pain, and similar conditions (Willson & Clifford, 1992).

1.3.3 The Assam Tea

Singphos were the first users of tea in India. Singpho and Khamti people used to make tea beverages. Robert Bruce, a Scottish adventurer reportedly found the tea plant growing wild in Assam. Maniram Duta Baruah introduced Robert Bruce to the local Singpho Chief Bessa Gam (Gokhale, 1998). In 1823 AD, Robert introduced tea as a plantation in Assam. However, he passed away soon after, without witnessing the proper classification of the plant. It wasn't until the early 1830s that Charles, Robert's brother, sent a few leaves from the Assam tea bush to Calcutta for a thorough examination by the botanist Nathaniel Wallich. The plant was identified as a variant of tea, viz. Camellia sinensis, distinct from the Chinese version. In 1834, the Tea Committee of Lord William Bentink, then British India's Governor-General, decided to encourage the planned cultivation of tea. As a trial, the first tea garden was established in the Lakhimpur district in 1835 (Hunter, 1879). The first batch of tea was shipped to London in 1838 and auctioned the next year. The Assam Company began operations in 1840, where Maniram Duta Baruah was a Dewan (chief administrative and financial officer). After 1841 Maniram no longer appears in the Assam Company's records as its land agent. The records provide no clues as to why or when he was dismissed (Sharma, 2011). He started his tea estates at Cinnamara near Jorhat and Singlo near Charaideo. Roseswar Barua followed him with seven gardens (Chakravorty, 1997). The other tea companies that came into prominence around this time included the Dum Duma Company, the Jokai Company, the Assam Frontier Tea Company and the Dihing Company (Imperial Gazetteer of India, 1908).

Fig 1.1 A garden of Assam Tea in 2023 (Photograph: Researcher)

1.4 The Tea Workers

During the formative days, labour scarcity was a constant hindrance to the expansion of tea plantations in Assam (Gait, 1902). The companies imported Chinese workers to work in the tea plantations, but by 1848, they all left.

The rural society of Assam had numerous self-sufficient village communities, where a "class seeking wage employment regularly was absent." (Phukan, 1984). People traditionally farmed their own land, favouring the autonomy and self-reliance that came with being a cultivator, given the soil's high fertility. A thin population and low rate of land revenue favoured the peasantry (Chatterjee & Das Gupta, 1981). There was also an acute shortage of adult population in Assam as an aftermath of the Moamaria rebellion (1770-1775 AD), and the Burmese invasion (1819-1824 AD).

Nonetheless, the British tried to recruit from the local populace for a fixed term. Kacharis, Mataks, Kukis, Nagas, Singphos and Apatanis were engaged (Kar, 2001). The Gaon Burha (headman) of the villages supplied them (Warren, 1975). Mostly they were people becoming landless due to buying and possessing land by the tea companies (Borgohain, 2015). Nonetheless, retaining them and tracking their whereabouts if they abandoned their duties halfway was challenging. They were reluctant to dedicate themselves to the demanding labor required in the plantations. The repressive environment prevailing in the tea gardens failed to lure the natives (Sharma, 2012). Under the circumstances, the planters started procuring labour from other States of India.

1.4.1 Import of Labour

Gradually, Indian tea gained popularity among British consumers and there was a 'mad rush to clear the hillsides of Assam for new gardens' (Bhowmik, 2011). Starting from the 1860s, the entire physical terrain of the Assam Valley underwent a significant transformation. Vast expanses of jungle and barren land, amounting to tens of thousands of acres, were turned into private properties. These estates were populated by workers, Indian clerical staff, and European supervisors along with their aides. This was done under the Assam Waste Land Rules 1856 (Goswami, 2012). The demand kept growing for a larger number of labourers. Full-fledged recruitment of cheap, helpless and illiterate labourers from Bihar, Orissa, Bengal, Chota Nagpur Plateau, erstwhile United Provinces, Central Provinces and Madras began (Barpujari, 2007).

This trend has similarities with other plantation industries. The cotton plantations in the southern states of North America, sugar plantations in Guyana and the Caribbean, rubber plantations in Malaysia, tobacco plantations in Indonesia and tea plantations in Sri Lanka all depended on migrant labour (Bhowmik et al., 1996).

1.4.2 Migrant Profile

1859 onwards, the companies began importing poor, landless, largely tribal people (Varma, 2016) from regions, where famine, drought, flood and epidemics were prevalent (Duara & Mallick, 2012). George Campbell, later to become the province's Lieutenant Governor, wrote: "Many of them are settled in the service of Bengal Indigo-Planters; they are very well known as labourers on the railways, roads, and other works of Western Bengal; and they are now, I believe, the favourite material for emigration to Assam." (Campbell, 1866). Those were the times of unrest in many areas of Bengal and Bihar (Singh et al., 2006). The Birsa Movement, the Sardari Larai, the Kharwar Movement in the Santhal Pargana, and the Tana Bhagat Movement in the Chota Nagpur division had all contributed to significant upheaval in the tribal regions. In some villages of the North West province, some of the tribals had completely lost their proprietary rights under the '*Kamiauti System*' (Jha, 1996). Moreover, starvation, drought, flood and epidemics were prevalent in these agrarian regions. This led to the migration of a huge population to Assam. They voluntarily took hold of the opportunity offered by the recruiters and readily migrated to Assam (Singh et al., 2006).

The majority of these immigrant labourers were peasants who cultivated rice, maize, wheat, barley, millets and so on in their homelands. (Imperial Gazetteer Bengal, 1907). Tea was an agro-industry that did have similarities to their prior agricultural lives, yet the plantation regime was an extremely new experience for these immigrant labourers.

1.4.3 Recruitment Process

Two systems for recruiting emigrants and forwarding them to Assam tea planters under the provisions of the law were in operation: *Thikadari* and *Sardari*, which functioned from 1859 to 1915 and from 1870 to1959 respectively (Kaniampady, 2003). The tea companies appointed agents, designated as Thikadars (contractors). These licensed individuals had a singular goal: to amass as many workers as they could, disregarding their suitability for labour in Assam or any other considerations beyond their readiness to relocate. An unlicensed sub-contractor also aided them in this task (Proceedings of the Chief Commissioner of Assam, 1884). Later, companies used to send *Sardar*s (leaders of the workers) to hunt and hire more workers from

different regions (Kurmi, 1991). Since there was no restriction upon the contractors, the system became known as the 'free contractor system' (Gupta, 2001). They were to be paid Rs.150 monthly towards maintenance and travelling and Re. 1 as commission for every man, woman and child dispatched to the respective tea gardens (Antrobus, 1957). Typically, they enticed young girls and single young adults away from their guardians, transported them to nearby depots, and promptly sent them off, leaving no chance for their whereabouts to be traced (Proceedings of the Chief Commissioner of Assam, 1884).

They secured agreements with impoverished and uneducated farmers by spinning tales of plentiful land, lucrative wages, and promising opportunities in Assam's tea plantations. In reality, "they found themselves set down in a swampy jungle, far from human habitation, where food was scarce and dear, where they have seen their families and fellow labour struck down by disease and death, and where they, prostrated by sickness, had been able to earn less by far than they could have done in their homes" (Report of the Commissioners on the Tea Cultivation of Assam, 1868). In 1864, a labourer working for the Public Works Department could earn Rs. 7 per month, while the prevailing wage in the Assam tea plantations ranged from Rs. 3.50 to Rs. 5.

By 1891, migrants made up nearly 7% of Assam's total population, with the Lakhimpur district accounting for the highest proportion at 41% (Provincial Gazetteer, 1983). Between 1870 and 1920, an estimated 750,000 workers were recruited to work in the Assam plantations. By the 1920s, the total labour force, including their dependents, was approximately 1,067,662 (Sharma, 2008; Das, 1931).

In response to rising unemployment and food shortages, the Assam Government in 1953 recommended that planters gradually reduce the recruitment of labour from other states. From 1960 onwards, external recruitment was halted, and labour was sourced from the existing pool of unemployed individuals within the state (Bhadra, 1990).

1.4.4 Family Labourers

Emphasis was placed on the migration of entire families, with a particular preference for women (Nath, 2016). This family-based migration strategy ensured the reproduction of labour, thereby addressing, to some extent, the issue of future recruitment (Bhowmik 2002). Furthermore, contractors lured men with alcohol and women, and young girls were kidnapped and married off in depots, a practice known as Depot Marriage (Singh et al., 2006). In 1877,

children constituted one-third of the workforce, and by 1930, they made up half of the workforce (Chakravarty, 2014).

1.4.5 Transportation of Labourers

Transporting labour to the distant tea estates before the advent of railways was a daunting task (Singh et al., 2006). The powerful currents, along with the accumulation of large tree trunks and rocks on the riverbanks, complicated boat navigation during the rainy seasons (Barpujari, 1980). Labourers were transported under appalling conditions, with journeys marked by diseases, hardships, and widespread deaths. Overcrowding worsened these journeys, facilitating the rapid spread of epidemics. Cholera was particularly prevalent, claiming many labourers during transit (Report on Labour Immigration into Assam, 1891). Matters of sanitation and health conditions of the migrating labourers in transit were assigned to inspecting medical officers in the 1841 depots, from where the labourers began their journeys to Assam, to determine their fitness for travel and work in the plantations (Das, 1931). “Deplorable travelling conditions aided sickness and mortality and in many instances, inspecting officials accused the on-board native medical doctors of inadequacy, inaction and neglect. There were also instances of medical men being threatened by the vessel commanders or owners to conceal the number of deaths and cases of sicknesses" (DeRenzy, 1891).

It was estimated that between 1871 and 1878, the annual average death rate during transit was 47.8 per cent of the average strength (DeRenzy, 1891). The then Deputy Surgeon General and Sanitary Commissioner of Assam A. C. C. DeRenzy recommended a plentiful and clean water supply on the steamers and at other points during their journey to the plantations. This led to a decrease in epidemic occurrences for a few years. However, deaths during transit surged again with 925 deaths among 31,217 labourers in 1888 and 596 deaths among 34,507 immigrants in 1889, largely attributed to the disregard of DeRenzy’s recommendations.

1.4.6 Early Plantation Life

1.4.6.1 The ‘Coolie’ Lines

Tea saplings were planted after clearing the forests, and within these jungle areas, the workers were made to live in lines (queues, serially). Injuries from thorns and cuts during clearing operations were naturally numerous. Labourers were likely to be attacked by wild animals, reptiles, and insects whose natural habitats and movements were disrupted by the establishment of plantations (Weatherstone, 1986). By the late nineteenth century, most tea gardens became physically isolated due to geographical distance and deliberate exclusion by fencing off from

urban settlements and surrounding rural society (Behal, 2006). Planters constructed barracks known as coolie lines for the overcrowded labourers. The term 'Coolie', believed to have originated from the Tamil word for wages "kuli" and long used for workers at the lowest rung of the Indian Ocean labour market, was acquiring a specific racial connotation through this recruiting process (Tinker, 1974). These 'Coolie's were lauded as far as the House of Commons for their primitive traits of obedience and toil (British Parliamentary Papers, 1837). The 1931 census report stated that "Coolies in Assam form, however, a separate class of the population no matter what caste or tribe they belong to and hence it seems best to treat all Coolie caste and tribes under one heading".

Workers were subjected to physical and social control by various methods, such as being compelled to reside within the vicinity of the gardens and being made completely dependent on their employers for every necessity of life (Behal, 1985). These socially secluded enclaves remained damp throughout the year. Dirty ponds were the primary source of drinking water, which were also used for bathing, washing clothes and shared by animals. Tea garden workers were allocated 25 square feet of area for their settlement. They were not allowed to leave their duty even in sickness; they were hunted down if they tried to escape even after they had completed their contracts, and subjected to severe physical punishment for perceived misdeeds (Sharma, 2009). There was no escape for these highly vulnerable people (Varma, 2016). To ensure that no worker escapes the tea estate enclaves, the companies appointed Sardar-Chowkidars wearing red turbans to instil fear (Kurmi, 1991). The workers were strangers to the hills of Assam, unfamiliar with the language and ignorant of the landscape. Their lack of local knowledge, combined with incentives given to local hill dwellers to track them with dogs, ensured that they had to endure the harsh realities of plantation life against all odds (Breman, 1989). Whipping was a common punishment for workers who were found trying to escape or performing poorly (Tea Industry in Bengal, 1873). They were prohibited from interacting with the outside world or even venturing out (Kurmi, 1991). The possibility of moving from one garden to another was virtually non-existent (Gupta, 1981). They were even forbidden to meet workers from another tea garden. Getting married required prior permission from the garden manager. Due to these harsh coercive methods used to suppress labour in the plantations, the tea plantations in Assam were likened to 'thinly disguised slavery' (Dowding, 1894).

In 1876, a mental hospital was established in Assam. 'There was a need for a mental hospital for tea workers, crazy sepoy and others' (Bordoloi, 1976). Initially known as Tezpur Lunatic Asylum, it was renamed Tezpur Mental Hospital in 1922. Meanwhile, Indian tea gained a

dominant position in the global market, surpassing China for the first time in 1888 and capturing 57% of the British market by 1901 (Behal & Mohapatra, 1992).

1.4.6.2 Unhealthy Gardens

The labour market in Assam's tea plantation was unique in that the supply side was governed by a set of factors that gave it the characteristics of a reserve army of workers (Mishra et al., 2008). Disease, malnutrition and a high mortality rate were the grim realities of plantation life for the labourers (Behal, 1985). Of the 84,915 workers brought to Assam by ship between 1863-66, as many as 31,876 died during the same period (Kurmi, 1991).

Diseases such as cholera, diarrhea, dysentery, malaria, anaemia (hookworm disease or ancylostomiasis was included in this category since 1893), kala-azar, dropsy, influenza, hookworm and respiratory complications were widespread (Shlomowitz & Brennan, 1990). Cholera deaths were common among the workers from the moment they started their journey to the Assam tea plantations. In addition to cholera, contaminated drinking water was also believed to be the main cause of diarrhea and dysentery, which accounted for a significant proportion of deaths in the plantations (Report on Labour Immigration into Assam, 1878). Malaria was so prevalent that a Malaria Babu had to be appointed in the tea estates to kill mosquitoes (Kurmi, 1991). Anaemia was extremely common among labourers, especially women, often leading to high maternal mortality rates (Gangulee, 1939; Amrith, 2008). It was widely accepted that among the garden population, the mortality rate of women was higher than that of men, mostly due to childbirth risks (Report on Labour Immigration into Assam, 1879). Pre-term and stillbirths, as well as teenage pregnancies, were reported to be very common among them, with severe implications for the young women's developing bodies. A large number of women showed symptoms of dropsy during pregnancy, caused by weakness and the effects of a poor diet (DeRenzy, 1880).

The low birth rate, high infant mortality rate, and prevalent abortions were alarming issues (Proceedings of Assam Labour Enquiry Committee, 1906). To ensure a sufficient workforce, tea companies compelled the tea tribes to increase the birth rate, and abortions were strictly forbidden. In the early 20th century, the Nazira medical officer stated that nearly 65% of female labourers in some gardens did not bear living children (Behal, 2014). Deaths associated with childbirth remain a grim reality among labourers in most gardens to this day (The Assam Tribune, 2018).

A system was established to classify plantations based on death rates. Gardens with an annual death rate exceeding 7% were labelled “unhealthy” (Report on Labour Immigration into Assam, 1884). An act passed in 1873 empowered the local government to close such “unhealthy” plantations. In 1889, 12.2% of gardens in the Brahmaputra Valley were deemed “unhealthy” (Report on Labour Immigration into Assam, 1890). In response to the growing number of unhealthy gardens, the Government of Assam introduced regulations in 1891. These required any garden appearing on the unhealthy list for two consecutive years to demonstrate adherence to the recommendations of sanitary officers (Das, 1931). Despite these measures, the situation did not improve, with the percentage of unhealthy gardens rising to 16.4% in 1892 (Report on Labour Immigration into Assam, 1894).

1.4.6.3 Acclimatisation

Dr G. C. Ramsay, the then principal of the India branch of the Ross Institute London states that most malarial cases in Assam tea plantations were, an “unwitting creation of mankind” (Minutes of Evidence, 1931). The underlying belief was that India was as distinct epidemiologically as was culturally, implying that any disease originating there must be due to peculiarities in its climate or geography. Historian Mark Harrison echoed this sentiment, characterizing Indian environments as inherently disease-prone and the native population as disease carriers (Harrison, 1992). The idea that the environment fosters microorganisms and diseases, thereby influencing historical trajectories, was prominently highlighted in historical discussions (Crosby, 1972; McNeill, 1976; Sellers, 1999).

The high mortality rate among labourers in Assam’s gardens was often attributed by planters to the labourers’ perceived inability to adapt to the local climate and diet. There was near-unanimous agreement among planters and medical experts that ‘up-country Coolies’ - a term used to refer to labourers from regions beyond Patna - were ill-suited to the conditions in Assam’s gardens. Labourers reportedly complained about the excessive rainfall and the resulting proliferation of leeches in the gardens, both of which they found disagreeable (Proceedings of Assam Labour Enquiry Committee, 1906). Persistent spells of rain and fever also raised concerns about their health in this new region (DeRenzy, 1890). It was later demonstrated, through time series and cross-sectional evidence, that new recruits were more likely to die. This was attributed to two factors: firstly, new recruits lacked exposure and immunity to a range of diseases they encountered either during their journey or in the gardens themselves; secondly, their health was already compromised before their journey due to factors

such as famine in their home regions, migration-related stress, low wages, or the need to adjust to new working and living conditions (Shlomowitz & Brennan, 1990).

1.4.6.4 Diet Variation

In Assam's old settled communities, residents cultivated a variety of dietary ingredients based on the availability of different vegetables, plants, and herbs in their environment. However, labourers, particularly those from wheat or millet-growing regions like the North West Provinces, were compelled to switch to a rice-based diet, which was provided by the garden authorities at subsidised rates (DeRenzy, 1880). A significant portion of the rice came from Burma, and it was mostly highly processed, low-quality rice with minimal nutritional value (Griffiths, 1967). The diet in the gardens was found to be severely lacking in fats, proteins, and vitamins, and the quantity of food provided was less than that offered in prisons or hospitals (Gangulee, 1939). Labourers who could not obtain food items other than the supplied rice survived on as little as 84 grains of nitrogenous food in their diet, whereas about 250 grains per day were considered sufficient for a person performing moderate work (DeRenzy, 1879). Deficient nutrition was often cited as a reason for their declining health and inability to recover after an illness (Report on Labour Immigration into Assam, 1883).

1.5 Legislative and Administrative Measures

There was no Labour Act in Assam before the Act of 1863 (Jha, 1996). Workers were largely unaware of their rights. Planters were legally permitted to apprehend and penalize 'absconding coolies' by imprisoning them within a plantation's phatak (Behal, 2010). Although several laws were enacted concerning the recruitment of labourers from outside Assam, it wasn't until 1915 that the contractor system was abolished and replaced with the 'Garden Sardari' recruitment system (Singh, 2001). In this system, a labourer, regardless of gender, was selected by the garden management and sent back to their place of origin to recruit their relatives and friends as labourers in Assam's tea gardens (Proceedings of the Chief Commissioner of Assam, 1884). To refine the recruitment system and alleviate the hardships faced by emigrants, additional acts were introduced. The 1932 Act led to the establishment of the Tea District Labour Association for labour recruitment. The government also appointed a new agency headed by a Controller of Emigration to oversee labour recruitment.

1.5.1 Legislative and Administrative Measures Post-Independence

Post-1947, following India's independence from British rule, many estates continued to be managed by the British. However, by the 1980s, these estates had largely transitioned to Indian

control (Hawksley, 2015). During the early post-independence period, British interests still dominated plantation estates, hindering value capture in what was then India's largest export earner (Achinto, 2013). The Indian government first addressed this issue in 1953 by establishing the Tea Board of India, which implemented a tax system to tighten industry control (Mohan & Sequeira, 2012).

The Plantation Labour Act of 1951 is seen as a significant milestone in tea plantation history, introducing numerous provisions for worker welfare. Until the enforcement of this act, Indian plantations were largely exempt from legislation (Harlalka, 1975). The Assam Plantation Labour Rules 1956, enacted by the state government based on this act, introduced various welfare measures for tea garden labourers and empowered the state government to establish rules for providing educational and recreational facilities for workers. The Assam Tea Plantation Employees Welfare Fund Act 1959 further provided for the promotion of adult education, literacy drives, community and social education centres, including reading rooms and libraries, games and sports, excursions, entertainment, and other activities. Additional laws such as the Maternity Benefit Act, 1961; Payment of Bonus Act, 1965; Contract Labour (Regulation and Abolition) Act, 1970; Payment of Gratuity Act, 1972, etc., were enacted to safeguard the rights, security, and welfare of workers in the organised plantation sector.

In 2004, the Assam government established the Tea Tribes Welfare Department to expedite the socio-economic development of Assam's tea tribes. This department also aims to improve education levels and coordinate with other departments to provide health and hygiene, sanitation, safe drinking water, electricity, etc.

Tea garden workers have been electing representatives from their own 'community' to the legislative assembly and the parliament of India. Their voices are also heard through trade unions, civil society organisations, media, and independent citizens (Das, 2012).

1.6 Present Status

Assam today is the world's largest tea-producing region and the fourth-largest tea exporter (Inter-Governmental Group on Tea, 2020). There are around 800 large and medium-sized tea estates in Assam, whereas around 0.13 million small tea growers contribute about 29% of the state's total tea production (Kakati, 2016). As per the Tea Board of India report, Assam produced 696.67 million KG of tea in 2022-23. Assam tea employs 17 per cent of the total workforce in the state (Assam Human Development Report, 2014).

However, the legacy of the tea tribes is still rooted in the underprivileged communities that hailed from regions plagued by famine and poverty. These communities, diverse in their language, tradition, culture, religion, and social background, were lured with deceptive promises of high wages, improved living conditions, and better life. They were told that they would be free to leave at the end of their contract period (Guha, 1977). The memories of their past are still vivid in the collective consciousness of the tea garden communities, echoed in folk songs such as "Alas, Jaduram, you sent me to Assam with false promises" (Mahato, 1985).

1.6.1 The Constant 'Class'

The plantation system is characterized by a clear, vertical hierarchy that upholds the class division between workers and management (Bhowmik, 2002). Even with legal protections and the existence of trade unions, the tea labour force remains one of the most vulnerable groups within India's 'organized' labour class. Previous studies indicate that labour relations in plantation economies continue to be oppressive, despite supposed radical transformations in production conditions, especially in technology, labour management, and marketing (Mishra et al., 2012).

1.6.2 The Working Poor

As of November 2023, tea plantation labourers in the Brahmaputra Valley receive INR 250, provided they harvest at least 24 KG of green leaf a day. They receive additional incentives for any surplus quantity harvested. The workers argue that their wages are significantly lower than the minimum wage for unskilled agricultural workers in the state, while plantation owners calculate wages based on the total value of both cash and in-kind benefits. Although part of an organized labour force with a steady income, these workers can be classified as 'working poor': they have regular work but remain poor (Sarkar, 2016). Among these workers, 50% of households are categorized as 'below the poverty line'. For 37% of their households, expenditure surpasses income, leading to recurring debt (TISS, 2019). They are subject to traditional money lending, controlled by traders and occasionally by the more affluent members of their community (Kar, 1993).

To reduce production costs, owners are progressively shifting towards casual employment. Currently, only 30-40% of tea garden workers in Assam are formally employed.

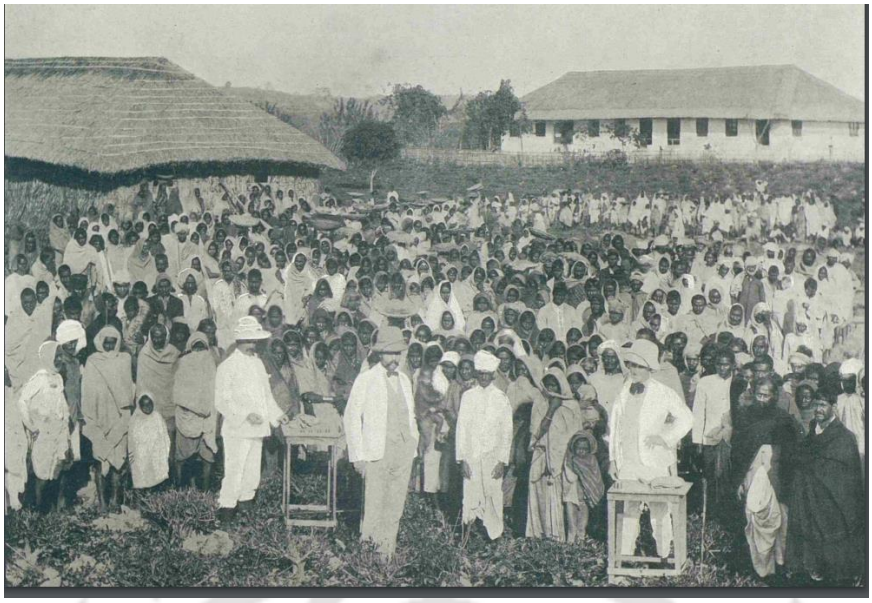


Fig 1.2 Pay-Day in an Indian Tea Plantation, 1910 (British Library)

1.6.3 The Pluckers

A significant portion of labour in the tea industry is dedicated to plucking, which accounts for about 70% of the workdays and 40% of the production cost. The majority of these workers, known as pluckers, are women who handpick tea leaves from tea bushes. Plucking is performed at regular intervals, typically twice a year during early spring and early or late summer. The tea leaves are handpicked and collected into large baskets or pieces of cloth tied on the workers' heads and carried on their backs. This method ensures that only the finest leaves are used for tea production. The task of plucking tea leaves involves navigating through rows of tea bushes on steep terrain and performing repetitive arm movements in an awkward posture (Bhattacharyya & Chakrabarti, 2009). Despite the presence of shade trees in tea gardens, the humid environment adds a burden on the workers. Once their baskets are full, the workers unload at a specific location where the leaves are weighed and collected for processing in the factory.

Contrary to the belief that plucking is light work, the physical strain of plucking and carrying heavy loads often results in musculoskeletal disorders among these women (Bhattacharyya & Chakrabarti, 2012). Various factors influence their physical work performance or capacity, including biological factors (e.g., age, sex, body dimensions), psychological factors (attitude, motivation), environmental factors (altitude, air pressure, heat, cold), the nature of the work (intensity, duration, technique), and training and adaptation (Sarma, 2015).

In addition to plucking, female workers also participate in activities such as nursery development and packaging of factory-processed tea. The tea industry has the highest proportion of female workers among all organized industries (Mishra et al., 2012). Women are not recruited for their skills in these tasks but as part of a family unit (Chatterjee, 2001), helping to manage the male workforce and ensure a steady supply of inexpensive labour (Rasaily, 2016).

Fig 1.3 Pluckers at a tea estate, 2022 (Photograph: Researcher)

1.6.4 Health indicators

The health indicators of the Assam plantation population are significantly below the state and national averages. Researchers have flagged their susceptibility to numerous health issues due to factors such as poor socio-economic conditions, illiteracy, and overcrowded, unsanitary living conditions (Saikia et al., 2014). Lack of education, unhygienic living conditions (Saikia et al., 2014), unhealthy dietary habits, consuming salted tea and tobacco all day contribute to their distressing condition (Vir, 2008). In addition to malnutrition, a comprehensive study (Medhi et al., 2006) revealed a high prevalence of infectious diseases among the tea garden population. They are found to be suffering from various endemic diseases, including gastroenteritis, anaemia, dysentery, diarrhea, worm infections, skin diseases, night blindness, hypertension, tuberculosis, pneumonia, and malaria (Kar, 2000). Anemia-related symptoms and associated morbidities are found in approximately 75% of adolescent girls (Panyang et al., 2018). A case study found anaemia to be a major cause of maternal deaths in Assam's tea

estates, with a maternal mortality rate of 363 per 100,000 live births, compared to 174 for the rest of India (Sachdev, 2018). Surveys also showed that the majority of maternal deaths in public health centres, community health centres, and district hospitals in upper Assam were from the tea tribe community.

Another study (Hazarika et al., 2002) indicated a high prevalence of hypertension (60.8%) among tea garden workers. A gender-specific and age-stratified analysis revealed an increased risk of hypertension associated with tobacco intake in women, while consumption of locally made alcohol was a significant risk factor for hypertension in both men and women. The practice of serving salted tea during working hours in large quantities is making the tea workers susceptible to severe diseases. Consumption of salted tea has also been linked to anaemia among female workers and an increased risk of cardiovascular diseases among both men and women (Dibrugarh University, 2017). Despite various health awareness programs aimed at reducing the consumption of salt tea, the habit persists among the workers. Workers lack awareness about nutrition and hygiene (Hazarika, 2012).

1.6.5 Sanitation

Tea workers' families often share their small homes with both children and livestock, surrounded by drains, dust, mud, and waste (Tasa, 2013). Effective communication about behavioural changes for proper sanitation use is absent. Despite having access to facilities, 38.9% of tea plantation workers do not use toilets. After defecation, 16.2% of workers clean their hands with ash, mud, or plain water. In 17.5% of households, the same water source is shared by humans and domestic animals (Bora et al., 2018).

The provision of clean, abundant water and the practice of water filtration are largely missing, leading to a high incidence of waterborne diseases in tea plantation areas. Water scarcity also contributes to hygiene issues. For example, women are compelled to reuse insufficiently cleaned menstrual clothes, leading to reproductive tract infections.

1.6.6 Alcoholism

The consumption of alcoholic beverages, particularly local drinks like *Haria* and *Sulai*, is a common practice among tea garden workers. *Sulai*, made from fermented molasses, is often contaminated with harmful substances like calcium carbide, urea, methanol, and even used batteries. *Haria* is made from fermented rice. Both drinks are prepared in unsanitary conditions and are illegally produced and sold within the tea gardens. A study conducted by Dibrugarh University (2017) states that the intake of these unhealthy beverages not only disrupts the lives

of workers but also contributes to higher mortality rates. It is a significant factor in their poor health conditions. In many instances, children also develop a habit of alcohol consumption. The study further reveals that domestic violence, fueled by excessive alcohol consumption by both men and women, is widespread in the tea gardens. Physical assaults by intoxicated male members are a frequent occurrence. Alcohol-induced altercations, conflicts, violence, and disturbances are common, affecting personal growth and mental well-being. Workplace productivity is also impacted. It is estimated that only one per cent of the workers remain active after reaching the age of 60 (Hazarika, 2012).

Previous studies have found that many of the tea plantation workers spend a significant portion of their earnings on country liquor, often at the expense of their family's needs (Joseph, 2009; Roy, 2005). A comprehensive cross-sectional study conducted to evaluate tobacco and alcohol use among tea garden workers in Assam found a higher rate of alcohol and tobacco consumption among those who were uneducated, school dropouts, or had illiterate parents (Medhi et al., 2006a).

1.6.7 Education

Research conducted among female tea garden workers in the Sonitpur district revealed that 72.25% of the women lacked basic literacy skills (Devi, 2014). In the broader context of the state, approximately 78% of female tea workers are either unable to read and write or can only sign their names to receive their wages, compared to about 40% of their male counterparts (TISS, 2019).

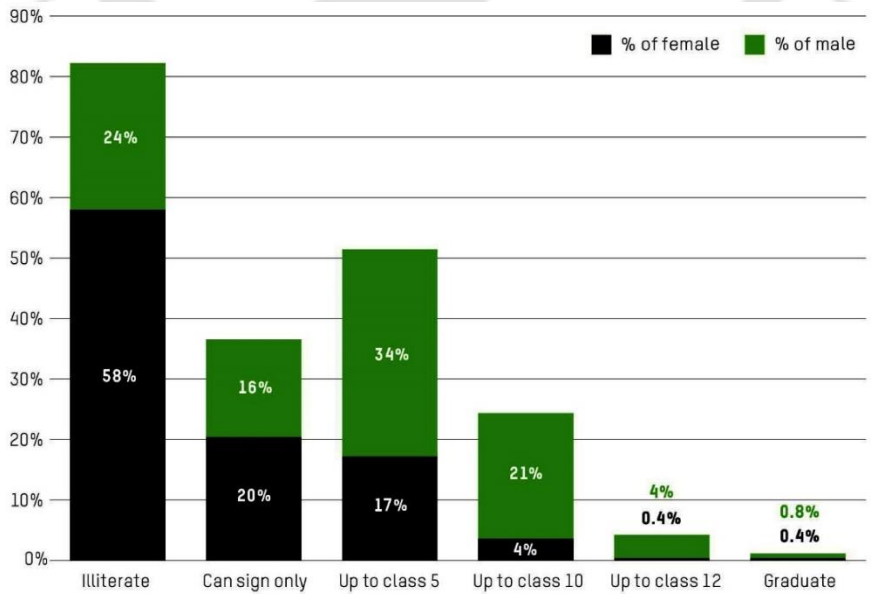


Fig 1.4 Literacy rates among tea estate workers (TISS)

Only 18% of workers have knowledge about the welfare schemes available to them (Hazarika, 2012). A significant majority of tea industry workers in Assam remain uninformed about the method used to calculate their wages.

Fig 1.5 Dafalating Tea Estate School, 2021 (Photograph: Researcher)

1.6.8 Early Marriage

In many tea gardens, early marriage is a prevalent practice. A study by the Regional Resource Centre for North Eastern States, under the Ministry of Health and Family Welfare, Government of India, reveals that 43% of married women in these tea gardens are 18 years old or younger. Furthermore, 11% of girls aged between 10 and 15 years are already married. This practice has significant implications for the health of both the mother and child. A large number of these female workers lack awareness about the importance of menstrual hygiene. They are not informed that using unclean materials during menstruation can lead to severe health complications (Dibrugarh University, 2017).

Additionally, many tea garden workers are unaware of family planning methods and do not see the need for them (Hazarika, 2012). Multiple childbirths, a common occurrence among tea garden women, worsen their challenges. A staggering 80% of these women have more than five children (Hazarika, 2012). This high fertility rate negatively impacts the reproductive health of women (Sengupta, 2009).

The lack of awareness hinders women's access to and enthusiasm for adequate prenatal and postnatal care. Despite the availability of hospitals and other facilities, many tea workers, particularly older women, prefer home births assisted by local midwives or dais (Kar, 1993).

A study by the National Health Systems Resource Centre (2015) reveals that many women either do not realize they are pregnant at an early stage or choose not to disclose their pregnancy, possibly due to the fear of losing daily wages. It also finds that 36% of mothers do not start breastfeeding within the crucial first hour after birth.

1.6.9 Hazards

The International Labour Organisation has identified several significant health and safety risks in the tea industry. These include injuries from the sharp edges of tea leaves, such as cuts to the hands, legs, and feet, as well as snake and insect bites. Workers are also exposed to the dangers of poisoning and long-term health issues due to the use or exposure to pesticides, and the strain of long working hours. In addition to tasks like weeding, hoeing, transplanting, manuring, and pruning, men in the tea gardens are primarily responsible for spraying tea bushes with pesticides (Bhadra, 1985). By the late 20th century, the harmful effects of these toxic pesticides on workers became a significant concern. The work is not only labour-intensive but also exposes the workers' bodies to substances that cause considerable discomfort. After the bushes are sprayed, the soil becomes saturated with corrosive products, often leading to blisters on the feet of barefoot workers (Chatterjee, 2001).

While handling pesticides, the workers typically do not have information about the name or type of the pesticides, their hazard category, the precautions to be taken, how to handle emergencies such as spillage or direct exposure, or the names of antidotes. It is not uncommon for pesticide sprayers to eat their lunch without washing their hands after being exposed to these hazardous chemicals (GNRTFN, 2016). Alarmingly, even adolescents are involved in the spraying of pesticides.

1.6.10 Super Naturals

While the world advances in various fields such as entertainment, sports, and cultural exchange, the tea worker community remains isolated from socioeconomic and moral enlightenment (Tasa, 2013). This lack of civic awareness has resulted in disorder within this community. They are oblivious to their rights within society and the nation, as well as the various laws, rules, and regulations that govern them. Communal harmony, peace, and discipline depend on such enlightment (Tasa, 2013). Superstitions have claimed lives within

the tea estates, in addition to incidents of mob violence against management and healthcare providers. Witch-hunting, a superstition still prevalent among the tea labourer communities, often targets widowed or unmarried women. Some individuals take pride in eliminating witches, resorting to violence to protect their community from perceived 'evil' (Kar, 1993).

During Diwali, the festival of light, they light the first lamp made of earth or green papaya inside their house. The belief is that if a daaini (local witch) finds this first lamp outside the house, the household may be destroyed, and the head of the house may die by vomiting blood. On this day, it is believed that daainis collect brooms, torn pieces of cloth, and female hair lying outside the house, dance naked at the smashan (funeral site), and drink human blood from tender livers. To protect the household, every family member rubs their hands, legs, and underarms with the oil from the first lamp (Kurmi, 1991).

The practice of bej/oja is also prevalent, where faith healers are believed to magically treat ailments, relationships, family disputes, bad fortune, and other matters. Almost all tea worker families believe in these faith healers, who provide prescriptions of tantra-mantra. They suggest worshipping viral diseases, storms, and all. The secret mantras of Kan Fuka are whispered into the disciples' ears, who often understand little about it (Tasa, 2013).

1.6.11 Occupational Diversification

By paying very low wages, the tea planters apparently compel the whole family to work in the tea garden. It is found that among the tea labour households (living within the tea gardens) nearly 65 per cent of those whose fathers were working in the gardens have a job within the garden. Many start working as young as 12-14 years old. Previous studies have found that the industry is characterized by the employment of adolescents and child labour as permanent workers, accounting for around 3.1% of the total permanent workforce (Bhowmik, 2002). The actual incidence of child labour is likely higher, as many are employed casually. Girls under 18 are recruited for plucking and packaging, earning less than the regular daily wages (Dibrugarh University, 2017).

A UNESCO (2003) report reveals that the proportion of out-of-school children in the tea gardens is significant, at 45% compared to the state average of 23%. The rate of missing children is also high among the tea tribe. Factors such as parental poverty, low education levels, and high alcohol consumption affect their ability and motivation to support their child's education. Few parents show interest in their child's education, with only a minority having visited their child's school or met the teacher (Nomani, 2008).

The availability of jobs within gardens as 'non-adult' workers makes formal education less appealing to children (Fernandes et al., 2003). Many parents also prefer their children to work in their 'ancestral occupation'. As children begin to supplement family income early, it eases the parents' burden. The reluctance to diversify occupations is also due to the significance attached to the garden as a 'way of life' and 'home'. Fear of social exclusion and ethnic discrimination also constrain household choices (Mishra et al., 2012).

The emergence of small businesses near labour lines, weekly markets, and basic amenities provided by tea garden management suggests that labourers rarely need to leave the tea estate areas. From the management's perspective, this arrangement creates a captive labour force.

1.6.12 The Tea Tribe

The 'Tea Tribes' and 'Ex-Tea Tribes' (Fernandes et al., 2003) in Assam are a diverse group, comprising over a hundred aboriginal Indian tribes and castes from various parts of central India. Initially, these labourers were bound by a 5-year contract, after which they chose not to return to their home states. They were given unused lands, known as Khas Land, near the tea estates to settle and stay engaged. They also continued as seasonal labourers in the plantations (Behal et al., 1992). This created the 'Ex-Tea Garden Tribe' (Talukdar, 2007).

The National Commission for Backward Classes (NCBC) clarifies that there is no single community identified as a 'Tea Tribe' in the central list of Other Backward Classes (OBC) for Assam. However, the list does include 96 castes that fall under 'Tea Garden Labourers, Tea Garden Tribes, and Ex-Tea Garden Labourers & Ex-Tea Garden Tribes' (PIB, 2012).

1.6.13 Language and Diversity

The migrant population of the Assam tea plantation workers is a linguistic amalgamation of three distinct groups: Kolarian-speaking (Ho, Munda, Santhal, Kharia, etc.), Dravidian-speaking (Oraon, Khond, Gond, Malpaharia, etc.), and those speaking Oriya, Bengali, and Hindi. Their settlement in the tea garden colonies of Assam led to their isolation due to limited external interaction, geographical remoteness, language barriers, and physical appearance differences. This multi-tribe, multi-caste, multi-lingual society gradually began to interact within themselves, reducing ethnocultural barriers and communication gaps. They adopted a new common language, a blend of Assamese, Hindi, and Bengali, now known as Chah Bagisar Asomia (Tea Garden Assamese Language), or Sadani, or Sadri (Tanti, 2002). This language has been used with dialectal variations over generations.

During extended holidays, students do not speak enough Assamese to retain what they have learned in school, necessitating teachers to spend weeks revising the previous session's syllabus. It is evident that the children use their home language when communicating with each other and that they switch to the school language when communicating with teachers (ASER, 2009).

A report by the Centre for Women's Studies, Dibrugarh University, submitted to the Ministry of Women and Child Development, Government of India, indicates that most workers primarily communicate in Sadri (73.70% in Dibrugarh and 62.70% in Tinsukia), with few using Assamese as their sole communication mode (0.30% in Dibrugarh and 1% in Tinsukia). However, a significant percentage (13.7% in Dibrugarh and 24.70% in Tinsukia) speak both Sadri and Assamese, while others speak Hindi, Oriya, Sabar, etc.

Along with their common language, they have begun celebrating various common festivals such as Dangoria Puja, Baghut Puja, Dharma Puja, Karam Puja, Menasha Puja, Sarun Puja, Kali Puja, Durga Puja, Tusu Puja, Madula Puja, etc., following their traditional customs. Among these, Karam puja for mother earth, accompanied by 'Jhumur Nritya', and Tusu Puja dedicated to folk goddesses are the most popular.

Despite such shared communication, different ethnic groups maintain their individual castes and ethnic identities (Magar & Kar, 2016). Their traditional religion, like other aboriginal tribes of India, involved worshipping village gods, deities, ancestors, and evil spirits. Today, the majority of the Assam tea tribe community are Hindus, with around 10 per cent having converted to Christianity.

1.6.14 Communication Campaigns

Posters, loudspeaker announcements, printed leaflets, and special programmes on radio and television are part of the communication campaigns created in the state language and disseminated by the governments and the tea industry management (Goduka & Das, 2021).

1.7 Research Gap

There is a noticeable absence of scholarly discourse on the effectiveness of mass media tools among the Assam tea plantation workers and on the applicability of various communication models in disseminating public interest messages among them.

No data is found on any analysis of the exposure, usage, and effectiveness of mass media tools in spreading messages of public interest within marginalised communities.

The scope of design intervention for improvising mass communication also remains unexplored. This void underscores the need for a new study.

1.8 Problem Statement

Requirement of design intervention in mass communication for communities such as the Assam tea plantation workers.

1.9 Research Justification

Despite being responsible for plucking and processing tea leaves that contribute to one-sixth of the world's tea production, Assam's tea plantation workers are disadvantaged in various parameters of living standards and awareness levels, which are necessary to enlighten them as informed citizens and make them participants in the development initiatives. These include awareness of health and hygiene, sanitation, nutrition, adult education, educating girl children, civic issues, superstition, family planning, childcare, dietary habits, drinking water filtration, waste disposal, alcoholism, banking, disaster preparedness, availability of welfare schemes and other such issues.

It is crucial to analyse the sufficiency of their existing communication campaigns and explore how design intervention in mass media tools could contribute to improving the effectiveness of public interest messages.

1.10 Research Questions

I. Do different mass communication models represent the context of communities such as the Assam tea plantation workers?

II. Have different mass media tools effectively served necessary public interest messages to the Assam tea plantation workers?

III. What is the prospect of design intervention in mass media tools for the Assam tea plantation workers?

1.11 Research Aim and Objectives

1.11.1 Research Aim

Design intervention in mass communication for Assam tea plantation workers.

1.11.2 Research Objectives

I. Analyse whether different mass communication models represent the context of communities such as the Assam tea plantation workers.

II. Measure the effectiveness of different mass media tools in serving necessary public interest messages to the Assam tea plantation workers.

III. Explore the scope of design intervention in mass media tools for the Assam tea plantation workers.

1.12 Research Methodology

1.12.1 Secondary Survey

A secondary survey for analysing communication concepts and models is conducted. The study focuses on their relevance and applicability in disseminating public interest messages among communities such as the Assam tea plantation workers.

The secondary survey extends to reviewing information design elements and principles. The study examines the possible meeting points of design and communication and gathers insights on design intervention in media tools for mass communication.

For the secondary research, the following methods are adopted:

- Different libraries were visited.
- IITG Central Library provided access to its e-database.
- Archives, books, journals, magazines, newspapers, souvenirs – all were searched comprehensively as per the defined inclusion criteria.
- All relevant materials have been refined as per the defined exclusion criteria.

The following criteria for surveying/reviewing the existing literature are adopted:

Tab 1.1 Criteria for secondary survey

Inclusion criteria	Exclusion criteria
Included research papers published in journals, besides conference papers, books, articles, and anything published.	Unpublished materials excluded.
Comparison of communication models and attempts to design new models included.	Communication models irrelevant to mass communication or design are excluded.
Testing the effectiveness of communication models included.	History and chronology of communication models excluded.
Connecting design and mass communication have been included.	Design literature without a communication dimension has been excluded.

1.12.2 Primary Survey

The primary survey employs different tools and techniques of data collection, analysis and inferences. In the survey tool, 15 questions are set so that the 7 key indicators can be measured for the effectiveness of different mass media tools in communicating public interest messages among the Assam tea plantation workers. The districts are selected by convenience sampling based on high tea garden concentrated areas and familiarity with the researcher. The selection of tea gardens is made by purposive sampling based on the size of the tea gardens, ownership of the tea gardens, and the availability of permission/consent to access the workers' colonies. With a sample size of 186, the respondents are selected by simple random sampling within the selected tea gardens. On SPSS, a .05 significance level is applied for drawing inferences. The effectiveness of mass media tools among Assam tea plantation workers is measured between 0 and 1, with 0.5 set as the average effectiveness parameter. The collected data is processed using Statistical Package for Social Sciences (SPSS). A .05 level of significance is used for the tests.

1.12.3 Framework and User Validation

In the next stage, a framework is proposed for alternative message designs. 10 experts are involved in previewing the design proposal, followed by recorded field validation among the end users with projective technique. This leads to the findings and recommendations, which are again validated by the producers of mass communication campaigns.

1.13 Overview of Research Flow

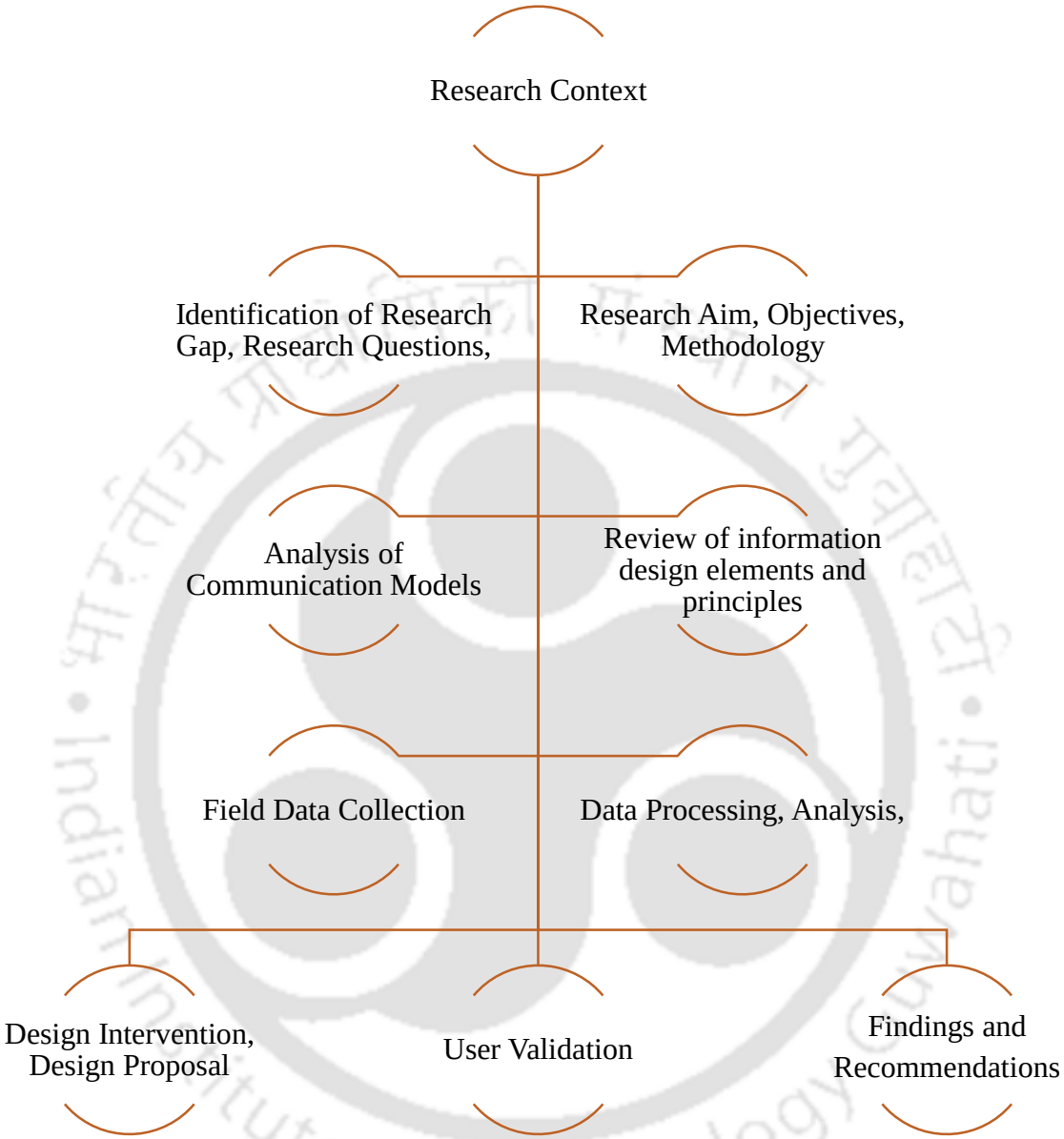


Fig 1.6 Research flow

1.14 Scope and Limitation

1.14.1 Limitation of this Research

Accessing the tea plantation workers' worksites and residential areas is a challenge, and therefore the field studies to be done with limited time and faster speed to meet the restrictions. The area of world tea is vast; this research has to be confined to the Assam tea estates in the Brahmaputra valley.

1.14.2 Future Scope of Study

The study is based on the Assam tea plantation worker community for specific context-based research. It will have scope to extend the scope of study and include other plantation communities including coffee, rubber and even tea industry workers elsewhere such as North Bengal, Nilgiris, Sri Lanka and other areas.

1.15 Expected Outcome

The research aims to explore design intervention in mass communication to improve awareness of Assam tea plantation workers. Its objectives include analyzing different mass communication models; whether they represent the context of communities such as the Assam tea plantation workers as well as measuring the effectiveness of different mass media tools. This will be a significant contribution to the area of mass communication design, which will be a fresh exchange of two disciplines - mass communication as well as design. A new design proposal for a mass communication model is expected as the outcome of this research work. The model can provide guidelines for mass communicators in designing messages for mass campaigns among marginal communities to communicate the message content in the best possible form and with maximum effectiveness.

CHAPTER 2: Analysis of Communication Models

To find insights for Research Question 1, this chapter surveys available literature found in different disciplines of communication. The most pertinent features of these concepts or models (Goduka & Das, 2024) are extracted and synthesised.

2.1 Media Literacy

Media literacy, at its core, is the capacity to access, comprehend, and generate communications across diverse contexts (Office of Communications, 2006). The swift progression of media technology has intertwined traditional literacy and media literacy to the point of inseparability (Bazalgette, 2005). What we perceive as traditional literacy is, in fact, media literacy, a concept defined in a bygone era that retains its relevance today (Sobers, 2005).

2.2 Communication Variables

It is essential to recognise the role of and interaction among communication input variables and output variables, which have been listed by McGuire (2001).

Communication input variables include:

- Source
- Message
- Channel
- Audience
- Outcomes

Communication output variables include:

- Exposure
- Attention
- Liking
- Comprehension
- Generating related cognitions
- Acquiring skills
- Attitude change
- Storing
- Retrieving
- The decision to act in accordance with the retrieved position
- Action

- Cognitive integration of behaviour
- Encouraging others to behave similarly

Potentially valuable output variables to consider include:

- Audience choice
- Social settings of media use

This model builds upon the conventional instrumental learning approach (Hovland et al., 1953). It introduces several modifications to the simple communication/persuasion matrix (McGuire, 2001), such as the elaboration likelihood model (Petty & Cacioppo, 1986), self-persuasion (McGuire, 1960), and alternate causal chains (Bem, 1970).

Key variables for the source (or messenger) include credibility, attractiveness, and power. However, these effects may vary in conjunction with other factors. For instance, attractiveness may be linked with the formality of dress, and credibility may be associated with the similarity in gender or ethnicity between the source and the audience.

At the most basic level, effective appeals usually link a valued (positive/negative) incentive with a high enough probability that the promised/threatened outcome will materialize. Common incentives are related to health, time/effort, economics, ideology, aspirations, social acceptance, and status. For instance, well-crafted fear appeals can heighten a smoker's perceived risk of social rejection, even though they may not bring the distant likelihood of lung cancer to noticeable levels.

Channel variables (McGuire, 2001; Atkin, 2001) differ across different media in terms of:

- Reach
- Specialisation
- Informativeness
- Interactivity
- Modalities
- Cognitive effort
- Effect on agenda setting
- Accessibility
- Homogeneity of audience
- Efficiency of production and dissemination
- Context in which the audience uses the medium

Salmon and Atkin (2003) compared 25 channels across 6 major media features relevant to campaign design and effectiveness. The media features are:

- Access
- Reach
- Ability to reach specific target
- Depth
- Credibility
- Agenda setting

Other relevant features include:

- Intrusiveness
- Safeness
- Participation
- Sensory modalities
- Personalisation
- Decodability
- Efficiency (in both production and dissemination)

Audience variables include:

- Risk
- Cognitive development
- Education
- Vulnerability to social influence

Central outcomes include:

- Beliefs
- Attitudes
- Behaviour
- Persistence of outcome
- Resistance to persuasion

McGuire (2001) explored the possibility of these elements being influenced by, or interacting with, other variables. Atkin (2001) highlighted that the focus on different input and output variables would vary based on the campaign's objective depending on the nature of the campaign goal and type of message awareness, instruction or persuasion.

2.3 Community Media

Different types of media are often created for various social classes, a trend that is becoming more pronounced in the age of media fragmentation (Williams & Carpini, 2011). The global dimensions of community media show that the effort to establish media systems that are both relevant and accountable to local communities is a struggle that resonates across cultures and peoples (Howley, 2010). For those who have limited or no access to mainstream media, community media offer the resources and opportunities to narrate their own stories, in their own unique voices and idioms (Rodriguez, 2001).

However, the field of community media studies lacks clear definitions. The term "community media" is just one of several phrases, including "participatory", "alternative", and "citizen media", used to characterize media that is produced by, for, and about local communities (Carpentier, 2007).

Williams (1973) underscores the pivotal role of communication in shaping our individual and collective understanding of the relationships of "significance and solidarity" that constitute a community. Berrigan (1977) highlights two key concepts for understanding community media: access and participation. His analysis uncovers a shared aspiration to shift communication systems from top-down models of message production/distribution towards a decentralized communication approach that fosters dialogue and exchange. Both concepts reject one-way communication flow, centralized decision-making, and the perception of the community as passive and non-contributing.

Curtin (2004) posits that institutional forms and practices are successful to the extent that they "capture and express the social experiences of their audiences". Social experience encompasses various aspects: the locale's social history and physical environment, demographics and migration trends, economic and regulatory conditions, and communication and transportation infrastructures, as well as local traditions, customs, and sensibilities.

2.4 Development Communication

Development communication aims to improve living conditions through the application of communication strategies, practices, and technologies. The initial approach to development communication was heavily influenced by Shannon's (1948) 'transmission model of communication', which prioritizes social control, persuasion, and behaviour modification. This model, with its focus on message design, production, and distribution, and its relative disregard for audience feedback and response, favours the sender over the receiver of a message. It

imposes meanings on the audience members rather than allowing them to interpret and construct meanings within their community.

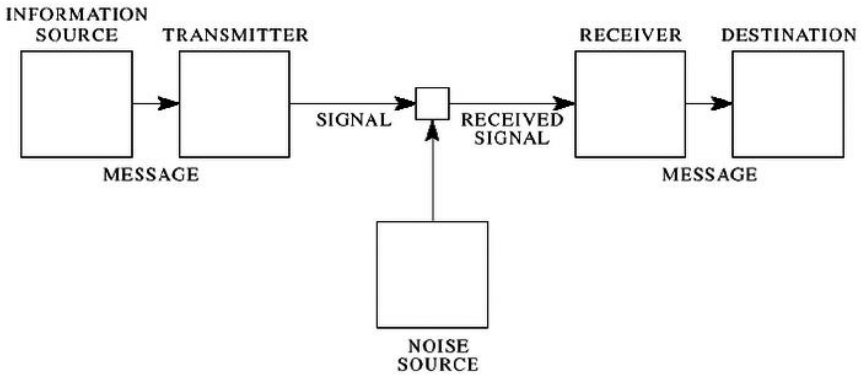


Fig 2.1 Shannon's transmission model of communication

Freire (1970) challenged the efficacy of development communication models that pinpoint problems and propose solutions based on the observations and recommendations of external experts. Freire's critique highlights the issue with vertical or top-down communication approaches that prioritize information transmission over the construction of local knowledge. In recent decades, the language, practices, and goals of development communication have evolved in response to the proliferation of information and communication technologies (ICTs) (Craig, 2007).

2.5 Participatory Communication

The participatory methods in development communication emerged in the early 1970s. These methods aimed to utilize communication resources to instigate change, involving the people affected by these changes (Boafo, 2002). Participatory communication holds several advantages over the long-standing transmission model in development communication. It has been instrumental in crafting development messages that resonate with the cultural context and appropriateness of a specific social setting. This approach has been effective in overcoming resistance to development messages that were either overlooked or not aligned with local cultural values, forms, and practices.

Participatory communication emphasizes the significance of the "process" over the "product" in the realm of community communication (Higgins, 1999). The focus transitions from merely transmitting information to the "organizational value of communication and the role of communicative efforts" in empowering individuals. In other words, it is about how communities can leverage information to mobilize themselves (Krishnatray et al., 2006).

Carey's (1988) ritual model perceives communication as a collective endeavour where participants (re)generate knowledge, (re)formulate meaning, and (re)build communal relations and collective identity over time.

Nair and White's (1994) model of participatory message development adopts the properties of dialogue as its framework, where dialogue is seen as a horizontal exchange rather than a top-down command.

More progressive approaches to participatory communication empower community members by providing them with the tools of media production - microphones, audio and video recorders, computers, and so on (e.g., Manyozo, 2003).

2.6 Mediated Communication

Traditional communication models posited that mass communication is a one-to-many process, assuming the existence of a passive mass "audience" with uniform tastes regarding the transmitted information, rather than diverse "users" seeking different experiences. Subsequent researchers endeavoured to identify systematic receiver differences as the central point of message design. The classic Westley and MacLean's (1957) model of mass communication, applicable to all artefacts to which people assign meanings, introduces a "gatekeeper" phase, a one-way filter for encoding from the source, but lacks a filter for decoding at the destination. Consequently, the processes by which communicators' intentions are converted into artefacts are only loosely linked to the processes by which users interpret those artefacts.

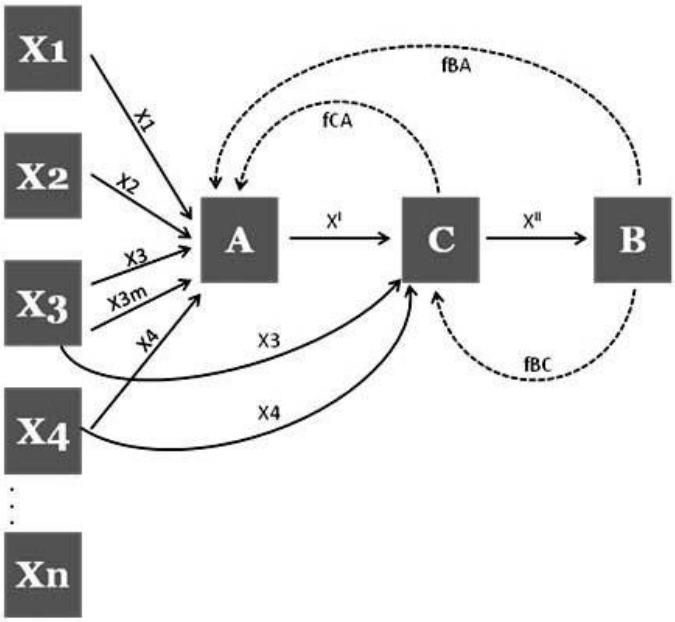


Fig 2.2 Westley and MacLean's model of mass communication

The impact of mediated messages on audiences' intentions and behaviours is likely to be channelled through their immediate perceptions (Grube, 2004).

2.7 Semiotic Analysis of Media

Images and narratives we encounter daily in the media often go unnoticed; they serve as a backdrop to our social lives, a continuous stream of signs and symbolic content "that shape and inform a complex, unstructured, and not fully articulated understanding of life and the world we live in" (Orgad, 2014). Semiotic analysis aids in examining the meanings of these media representations.

The idea that representations create rather than mirror reality is grounded in semiotics and other elements of the constructionist approach (Hall, 1997; Orgad, 2014). This approach posits that any representation is inherently a construction, a selective and specific portrayal of certain aspects of reality, which produces certain meanings and omits others. This perspective is based on the understanding that: "we assign meaning by how we represent them - the words we use about them, the stories we tell about them, the images of them we produce, the emotions we associate with them, the ways we classify and conceptualize them, the value we place on them" (Hall, 1997).

Media users react only to the events that become images in their minds. They construct symbolic meaning as decoded from the media content (Bartsch et al., 2006; Scherer, 2001).

Lars' (2018) alternative model aims to emphasize the key communication entities and their interrelationships and potentially encompasses all possible types of meaning communication. It is designed to account for both verbal and non-verbal meanings, the different roles played by minds and bodies in communication, and the relationship between pre-semiotic and semiotic media features.

The visual diagram of this model includes 3 communication entities:

- What is being transferred: cognitive import.
- Two distinct locations where the transfer takes place: the producer's mind and the perceiver's mind.
- An intermediate stage facilitating the transfer: media product.

Moreover, it illustrates 4 crucial interrelationships among these entities:

- An act of production between the producer's mind and the media product.
- An act of perception between the media product and the perceiver's mind.

- Cognitive import within the producer's mind and the perceiver's mind.
- A transfer of cognitive import through the media product.

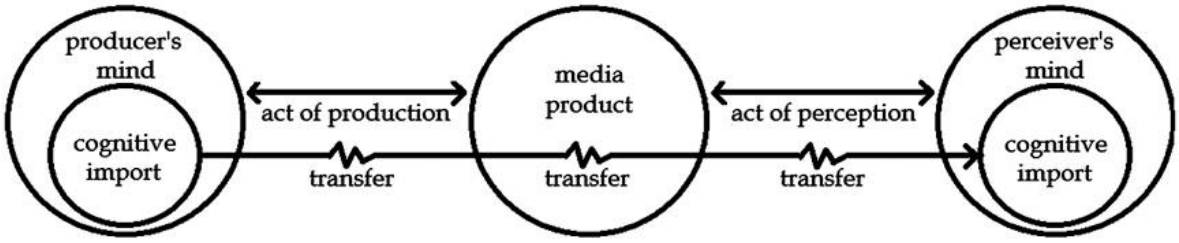


Fig 2.3 Lars' Model

Hall rejects the notion that meanings are fixed in messages and wholly consumed by receivers. Instead, he proposes that messages are always subject to multiple interpretations, even though there are intended "preferred readings", thereby positioning audiences as active interpreters, creating their own meanings from media texts. These audiences sometimes even resist preferred readings and substitute them with alternative or oppositional ones (Hall & Jefferson, 1976; Hebdige, 1979).

2.8 Media Effects

The majority of mass communication research implicitly adheres to Lasswell's model, where the "effect" is the central component. This effect signifies a visible and quantifiable change in the receiver, triggered by identifiable elements in the communication process. Lasswell and others hypothesized that the dissemination of information via mass communication directly influences attitudes and behaviours (e.g., Doob, 1935).

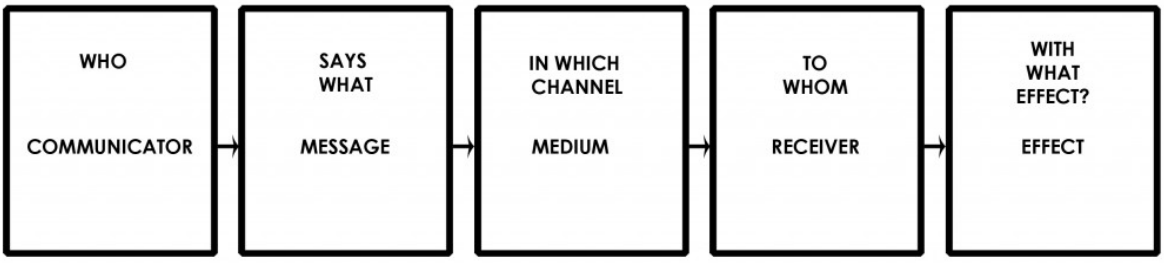


Fig 2.4 Lasswell's model of communication

Over the years, the focus of media audience research has oscillated between "what do media do to audiences versus what do people do with media" (Katz et al., 1973). The prevailing paradigm has been the pursuit of specific, measurable, short-term changes in attitudes and behaviours resulting from media content (Arndt, 1968; Rosario, 1971). However, gauging the impact levels of any creative endeavour is a complex undertaking (Buckingham et al., 2000).

Media effects research has primarily revolved around the relationship between input variables (e.g., media information and its characteristics) and output variables (e.g., attitudes, beliefs, behaviour), with minimal attention to the cognitive processes that could mediate these relationships (Hawkins & Pingree, 1990; Reeves et al., 1982).

To scrutinize the various social and psychological contexts of media use, researchers (Adoni, 1979; Dimmick et al., 1979; Finn & Gorr, 1988; Hamilton & Rubin, 1992; Lull, 1980; Rubin et al., 1985; Windahl et al., 1986) have explored the role of factors such as life position, lifestyle, personality, loneliness, isolation, need for cognition, religiosity, media deprivation, family-viewing environment, and others. They have also evaluated how changes in background variables, motives, and exposure influence outcomes (Carveth & Alexander, 1985; Garramone, 1984; Perse & Rubin, 1988; Rubin & McHugh, 1987).

A quantitative study by Lazarsfeld and colleagues on the radio's influence on women voters' choices documented a two-stage opinion formation process (Lazarsfeld et al., 1944; Katz & Lazarsfeld, 1955). They found that after listening to the radio, audiences discussed with friends whose opinions they valued and trusted to evaluate the broadcast and form their own opinions. These friends were termed as "opinion leaders". This process showed that direct short-term effects were limited, and it aimed to eventually demonstrate broader, long-term effects. Their two-step flow model suggested that media messages reach people not directly, but through the selective, partisan, complicating interpolation of "opinion leaders". This perspective acknowledged that informal social relationships significantly modify how individuals react to a message received via mass media. These were referred to as interpretive frameworks on how people encounter the media.

The psychosocial and other factors were incorporated into subsequent communication models, leading to an array of increasingly sophisticated versions of the linear models of stimulus-response or cause-effect.

Barcus labels certain influencers who tend to seek advice as "professional intermediaries", who are some institutionalized source, where the knowledgeable person has been formally appointed in that role. Newcomb introduces a triangular model incorporating social relationships in the mass communications process and with a simplistic indication of how people and systems in society attempt to maintain equilibrium. Troldahal presents another conceptual model, the two-cycle flow of communication, which continues in much of the communications literature also as a multi-step flow (Budd & Ruben, 1988).

2.8.1 Stimulus-Response

Effects are contingent on both the orientations of audiences and their exposure to media content, as encapsulated in the O-S-O-R models (Markus & Zajonc, 1985).

- The initial 'O' symbolizes the orientations, which include the structural, cultural, cognitive, and motivational traits that the audience brings to the reception situation. These traits, often termed as individual differences, are likely socially determined and represent the person's subjective responses to the objective conditions of their community and world.
- 'S' signifies the stimulus effects or the impact of messages. The subjective orientations can modify effects either by determining the extent of message usage or through interactions with message content, thereby amplifying or reducing the effect's strength (Baron & Kenny, 1986).
- The second 'O' represents the orientations, encompassing the various ways audiences may handle media messages. This includes strategies people use to manage the information overload (Graber, 1988).
- 'R' denotes the subsequent response or outcome of the message (Hawkins & Pingree, 1986).

This framework acknowledges that numerous contextual, cultural, and motivational factors that people bring to the reception experience influence how they process the message (McLeod et al., 1994).

The O-S-O-R framework has been revised to the orientation-stimulus-reasoning-orientation-response (O1-S-R1-O2-R2) model (Cho et al., 2009). This model merges insights from iterations of the communication mediation model (Friedland et al., 2007; Sotirovic & McLeod, 2001) and the cognitive mediation model (Eveland et al., 2003). A notable strength of the communication mediation model is its integration of mass and interpersonal communication into processes leading to civic engagement (Huckfeldt & Sprague, 1995).

2.8.2 Uses and Gratification

The uses and gratification perspective (Flanagin & Metzger, 2007; Stafford et al., 2004) posits that individuals are purposeful and active, selecting and utilizing media based on their needs and motivations. It connects the gratifications sought and obtained from media content. This viewpoint assumes the role of consistently active and engaged consumers, which is often not

the case. Katz (1959) proposed that a media message typically could not influence an individual who found no use for it.

Klapper (1963) advocated for broadening the uses and gratifications inquiry. Some researchers incorporated uses and gratifications into a social-cognitive framework (Peters et al., 2006). Others have suggested transactional, discrepancy, and expectancy-value models of media uses and gratifications (e.g., Babrow & Swanson, 1988; Galloway & Meek, 1981; Palmgreen et al., 1980).

Banning (2007) proposed that uses and gratifications might underlie third-person effects. Haridakis and Rubin (2005) recommended expanding third-person effects research.

Some researchers suggested a merger of uses and gratifications and media effects research (e.g., Rosengren & Windahl, 1972; Rubin & Windahl, 1986; Windahl, 1981). The primary distinction between the two traditions is that a media effects researcher typically examines the mass communication process from the communicator's perspective, while a uses and gratifications researcher starts with the audience member (Windahl, 1981).

Another endeavour, the uses and dependency model, illustrated connections between an individual's communication needs and motives, information-seeking strategies, media uses and functional alternatives, and media dependency (Rubin & Windahl, 1986).

2.8.3 Media-User Interaction

The US Surgeon General's Commission on Television and Social Behaviours conducted a study where cameras were attached to televisions in the homes of volunteer families to record their activities while the television was on (Bechtel et al., 1972). This research highlighted the integral role of television in daily life and relationships, a concept later termed as "embeddedness" by Silverstone (1994). By the 1980s, American researchers began to focus more on people's interactions with television at home and elsewhere (Lindlof (ed.), 1987; Lull, 1990; James & McCain, 1982), moving beyond the traditional uses and gratifications approach.

The newly established Centre for Contemporary Cultural Studies at the University of Bermingham employed participant observation methods to explore how the British working class utilized mass cultural goods and media to shape their own culture (Butsch, 2017). Television audience studies (Brunsdon & Morley, 1978) also incorporated participant observation and in-depth interviews, allowing viewers to express their interpretations of the shows.

These studies were categorized as audience "ethnographies", a label that was later criticized for misrepresenting their methods and lacking an anthropological approach (McGuigan, 1992; Nightingale, 1993).

Schramm (1977) emphasized the importance of understanding how mass audiences interpret messages. He portrayed a multitude of individual "receivers", each interpreting one of many identical messages. These receivers, connected to a group, interact and respond to each other's interpretations, leading to a reinterpretation of the original message.

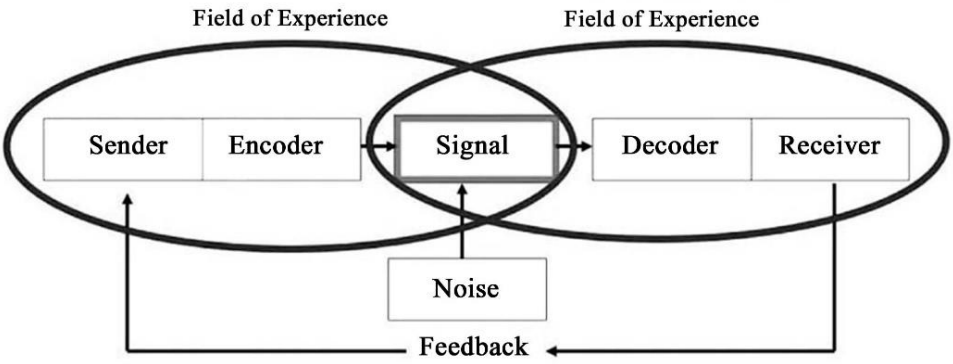


Fig. 2.5 Schramm's Model

In Maletzke's (1963) model of mass media, both the creators and interpreters of messages are depicted as having a perception of the other party. This could influence the intentions held, the messages created, the media chosen, and the interpretations formed.

Some communication researchers have argued that the media can only reinforce existing behaviour styles but cannot create new ones (Klapper, 1960). This view contrasts with a large body of evidence. Media influencers can create personal attributes and modify existing ones (Bandura, 1986; Williams, 1992). The proportional change model, accumulated information model, belief certainty model (Danes et al., 1978), mass persuasion model (McGuire, 2001), and self-efficacy model (Bandura, 1986) have attempted to present a more interactive, integrated understanding of person-situation factors (Bettinghaus, 1986).

2.8.4 Selective Exposure and Effects

Studies indicate that viewers tend to choose and interpret media messages that align with their existing attitudes and beliefs. There are patterns of selective exposure or preferential attitudes towards certain types of media and media platforms, which are not consistent across all viewers (Gunter, 1985). The way people perceive various media platforms or the extent to which the audience gravitates towards or across certain programs varies among different demographic

groups. There is substantial evidence that people selectively pay attention to information based on its relevance to them at a particular moment (Broadbent, 1977; Greenwald & Leavitt, 1984; Krugman, 1988; Pechmann & Stewart, 1988; Tolley & Bogart, 1994).

Personal experiences are known to moderate the impact of exposure to media messages (Hawkins & Pingree, 1990). For instance, racial/ethnic stereotypes in the media have been found to have the most significant effect on consumers when real-world experiences align with the media messages and/or when audience members have little or no real-world contact to draw from to form their judgments (Fujioka, 1999; Tan et al., 1997; Mastro et al., 2007). However, from the perspective of shared reality theory, reality itself is based on social verification, as collective legitimization is the force that transitions the subjective into the objective (Hardin & Higgins, 1996).

Research clarifies that consumer characteristics directly influence media effects. For instance, in her review of consumer processing of advertising, Thorson (1990) identifies individual difference factors such as motivation (or involvement), ability, prior learning, and emotion, among others, that influence how, and even whether, consumers process advertising messages. The theoretical basis for these effects is selective exposure, the proposition that consumers tend to see and hear communications that are favourable, congenial, or consistent with their predispositions and interests (Zillmann & Bryant, 1994).

The analysis of survey data collected by the National Opinion Research Centre found that the effectiveness of mass communication campaigns could not be enhanced merely by increasing the number of messages (Hyman and Sheatsley, 1947). The selection of media also reflects the extent to which the viewer perceives the messages as useful in achieving goals, informative, or consistent with or confirming of attitudes or beliefs.

Some models of media effects that explicitly employ individual differences as factors in their analyses demonstrate that individual variations can serve as important moderating variables. In addition to moderating the direction and nature of media influence, individual characteristics may also amplify or intensify media influences, or may even provide a necessary condition for media influences to occur.

2.8.5 Cognitive Response

The theory of cognitive dissonance (Festinger, 1957) explains the tendency of individuals to select information that aligns with their attitudes and beliefs, and to ignore or avoid information that contradicts them. This theory has been widely applied in the field of mass communication.

Extensive research on the effects of mass media has demonstrated that while media messages can alter people's knowledge or perceptions about a certain subject, issue, or individual, the most enduring changes in attitudes and behaviour occur when people are motivated and capable of processing the information, and this processing leads to favourable thoughts and ideas that are incorporated into the individual's cognitive structure.

The cognitive response approach, which has several variations, posits that individuals are persuaded not so much by the communication itself, but by their own thoughts in response to the communication. While this approach offers valuable insights into the process of persuasion, it only focuses on situations where individuals actively process the information provided to them. To address this limitation, the elaboration likelihood model of persuasion (ELM) was proposed (Petty & Cacioppo, 1986). The ELM suggests specific characteristics of communication receivers that influence the likelihood of a cognitive response. It posits that persuasion can occur under conditions of high or low thought, but the processes and outcomes of persuasion differ in each case (Petty & Wegener, 1999).

The ability to process a message is crucial. For instance, a complex or lengthy message may require more than one exposure for optimal processing. However, repeatedly presenting the same message can lead to decreased effectiveness, a phenomenon known as the "wear-out" effect (Sawyer, 1981). This effect occurs regardless of whether the message pertains to a topic of high or low interest. The ELM suggests that a media campaign should attempt different types of message variations depending on the recipient's overall motivation to think about the issue. According to the ELM, when the likelihood of elaboration is low (e.g., due to low personal relevance or knowledge, message complexity, numerous distractions, etc.), individuals may recognize that they do not wish to or are unable to evaluate the merits of the presented message, or they may not even make an effort to process the message.

Early theories of attitude change, such as those proposed by Strong (1925) posited that effective influence necessitates a series of steps (Petty & Cacioppo, 1984).

Watt and van den Berg (1978) explored various theories on the relationship between media communications and public attitudes and behaviour. They found that some attitudes are formed through a rigorous reasoning process where external information is related to oneself and integrated into a consistent belief structure (central route). In contrast, other attitudes are shaped by relatively simple cues in the persuasion environment (peripheral route). If a mass media influence attempt aims to create enduring changes in attitudes with behavioural implications,

the central route seems to be the preferred persuasion strategy. However, if the objective is to immediately form a new attitude, even if it is relatively transient, the peripheral route could be suitable.

Modern analyses of mass media persuasion have concentrated on identifying the factors that determine the effectiveness of media and the underlying processes by which media induce change. For example, McGuire's (1985) communication/persuasion matrix model of persuasion delineates the inputs (or independent variables) in the persuasion process that media persuaders can manipulate, as well as the outputs (or dependent variables) that can be measured to determine the success of an influence attempt. The inputs in this matrix are partly based on Lasswell's (1948) classic question: who says what to whom, when, and how (as in Fig 2.4).

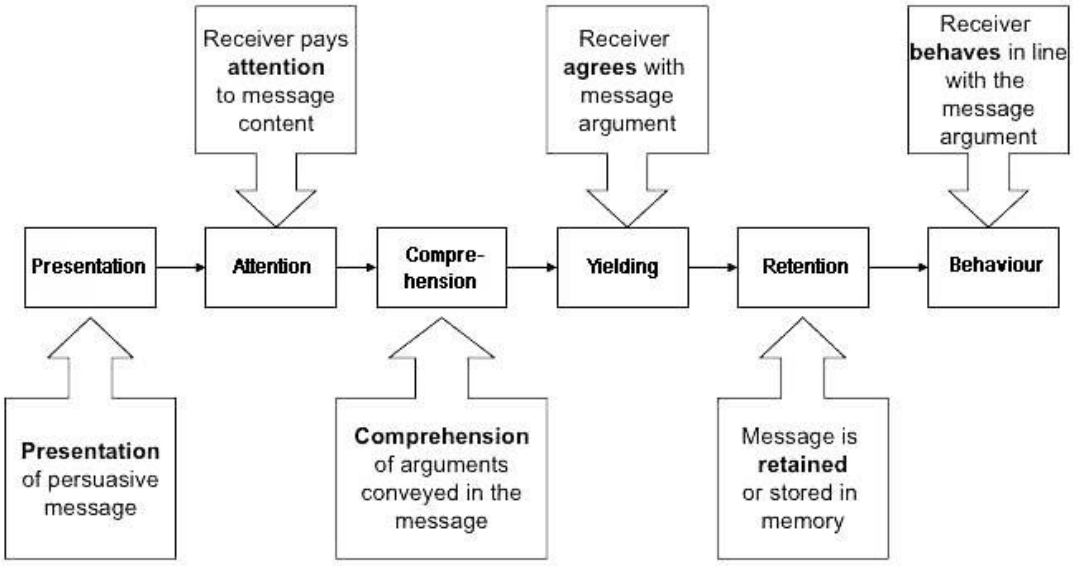


Fig 2.6 McGuire's communication/ persuasion matrix model of persuasion

McGuire pointed out that the probability of a message triggering each step in the sequence should be considered as a conditional probability. It is crucial to acknowledge that a single input variable can lead to different output steps. Interestingly, some steps in the proposed information processing sequence are entirely independent of each other, rather than being sequential (Greenwald, 1968; McGuire, 1985; Petty & Cacioppo, 1981).

2.8.6 User Involvement

Krugman (1965) introduced the idea of involvement as a counterpoint to the dominant models of mass communication effects prevalent in the late 1950s and early 1960s. Users of mass media can perceive a media environment in two distinct modes of reception: an involved mode

and a distanced mode (Vorderer, 1993). Users who are involved respond to media environments as though they were real, temporarily appearing oblivious to the mediated nature of the media (Lee, 2004). If the media environment absorbs (Zillmann, 2015) or immerses the user's senses and offers pertinent and significant insights, involvement is probable.

Contrary to the earlier bullet or hypodermic needle models that perceived audiences as uniformly passive targets absorbing information, the fundamental premise of the transactional model is that the effects of mass media are relatively limited. Factors such as individual characteristics, attitudes, experiences, predispositions, and so on, all mediate the effects of mass media. The conceptual shift was to alter the focus from "what media do to people," to "what people do to mass media."

2.8.7 Media Framing and Priming

Three aspects of media framing are distinguished: first, the innate frames that provide initial structures to visual experience, independent of social or other factors; second, the frames of society and culture, which, although initially external to the viewer, become internal due to overt or covert conditioning; and third, the frames of the media. All frames delineate a space, whether it is a film, television, photograph, or picture frame. However, it is most accurately reflected in the two-factor state of being, which comprises time and space.

Price and Tewksbury's (1997) model posits that constructs activated by the media and deemed relevant to the current situation shape how the message is framed or interpreted. Conversely, constructs activated by the media but deemed irrelevant to the current situation are not brought into working memory.

Media priming pertains to the short-term effects of media exposure on our subsequent judgments or behaviours. It is conceptualized by the Network model of memory. We perceive an image, listen to or read words, and retrieve meanings from memory. However, each of these processes is intricate and constitutes only a part of the mental work of comprehension. Numerous cognitive psychologists argue that constructing a mental model is a fundamental component of the comprehension process (e.g., van Dijk & Kintsch, 1983; Zwann & Radvansky, 1998).

2.8.8 Mental Representations

A mental model is a dynamic mental depiction of a situation, event, or object (van Dijk & Kintsch, 1983). These mental models serve as tools for processing, organizing, and understanding incoming information (Radvansky et al., 1998; Zwann & Radvansky, 1998),

making social judgments (Wyer & Radvansky, 1999), formulating predictions and inferences (Magliano et al., 1996), or generating descriptions and explanations of a system's operation (Rickheit & Sichelschmidt, 1999). A fundamental concept of the mental model approach is the existence of some correspondence between an external entity and our constructed mental representations of that entity (Johnson-Laird, 1989; Norman, 1983).

The Cognitive Theory of Multimedia Learning (CTML) is based on three assumptions (Mayer, 2001; Moreno, 2006):

- Humans process visual and auditory information through two distinct information processing channels.
- Each channel has a limited capacity for processing information at any given time.
- Active learning involves executing a coordinated set of cognitive processes during learning.

Given that multimedia or audio-visual presentations typically present information through more than one modality (e.g., visual images and auditory narration), the model traces the processing of information elements through the visual and auditory channels as they traverse the three classic cognitive structures of cognition and memory:

- Sensory memory (responsible for the initial encoding of external stimuli)
- Working memory (where active information processing occurs)
- Long-term memory (where information is stored beyond a few moments).

The CTML proposes that when a user interacts with an instructional message via multimedia or audio-visual, bits of visual and auditory information are encoded and processed separately, resulting in a pictorial mental model of the visual information and a verbal mental model of the auditory information. These two models are then integrated into a single representation where corresponding elements of the pictorial and verbal models are mapped onto each other.

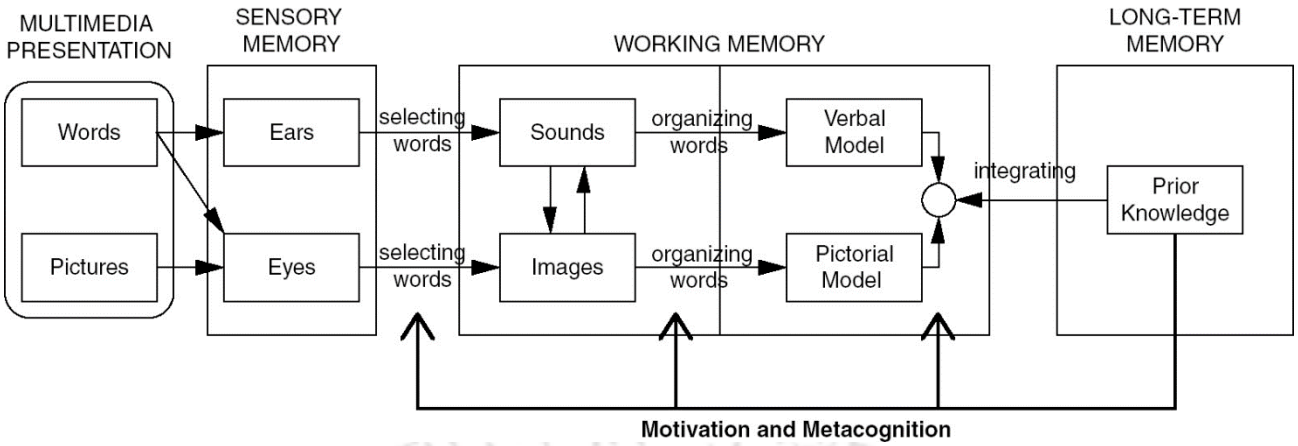


Fig 2.7 Depiction of cognitive theory of multimedia learning

The capacity model (Fisch, 2000) shares several features with CTML. It suggests that understanding educational content depends not only on the cognitive demands of processing the educational content itself but also on the demands posed by the narrative in which it is embedded.

If the message design includes too much extraneous material or requires users to engage in too much extraneous cognitive processing, then the demands will exceed the limited capacity of working memory, and the material will not be well learned.

Comprehension is influenced by distance, i.e., the extent to which the information is integral to the narrative. According to the capacity model, if this distance is large, the mental resources required for comprehension are generally devoted primarily to the narrative, leaving fewer resources available for processing the information. However, if the information is integral to the narrative, then the two complement each other rather than compete; the same processing that allows for understanding the narrative simultaneously contributes to understanding the information.

Thus, comprehension of information typically would be stronger under any of the following conditions:

1. When the processing demands of the narrative are relatively small (e.g., because few inferences are needed to understand the story or the viewer's language skills are sufficiently sophisticated to follow the narrative easily).
2. When the processing demands of the information are small (e.g. because it is presented clearly or the viewer has some prior knowledge of the subject).
3. When the distance between 1 and 2 is small.

2.8.9 Information Processing

Several models explain how individuals gather, retain, and utilize social information. The model by Wyer and Srull (1989) is comprehensive in that it outlines specific mechanisms for all stages in the information processing system, from input to output.

The heuristic/sufficiency principle (Carlston & Smith, 1996; Wyer, 1980) of social cognition research suggests that when forming judgments, people do not search their memory for all relevant information. Instead, they retrieve only a small subset of the available information. The criterion for retrieval is "sufficiency", meaning only the information necessary to form the judgment is retrieved (Wyer & Srull, 1989).

Constructs that are activated frequently tend to be easily recalled. The same general relationship applies to recent activation: the more recent the activation of a construct, the easier it is to recall (Higgins et al., 1977; Wyer & Srull, 1980).

Like frequency and recency, vividness also has particular relevance to media effects. More vivid constructs are more easily activated from memory than less vivid ones (Higgins & Kings, 1981; Nisbett & Ross, 1980; Paivio, 1971).

2.8.10 Cultivation Effect

Gerbner (1969) initiated a research project, Cultural Indicators, aimed at offering an integrated method for examining television policies, programs, and impacts. He formulated a theory of media effects, known as cultivation, to comprehend the implications of being raised and living in a culture dominated by television.

Significant differences exist between cultivation theory and reception models of media texts (McQuail, 2000). According to the reception viewpoint, other factors can intervene and neutralize the cultivation process. The way viewers interpret texts is more crucial than the amount they watch (Swanson, 1979).

Potter (1986) and others have suggested that outcomes like cultivation are influenced by people's varying perceptions of the realism of media content. More potent cultivation effects were observed when media content was perceived as realistic.

Some studies propose that the correlation between viewing and perceiving is not causal but stems from third-variable influences, such as direct experience and available viewing time (Doob & Macdonald, 1979; Hirsch, 1980; Hughes, 1980; Wober & Gunter, 1988). Other research suggests that the causal relationship between viewing and social perceptions may be

reversed, meaning individual aspects (including pre-existing social perceptions) may affect the quantity and content of viewing (Zillmann, 1980).

The process model for first-order effects, also referred to as the heuristic processing model of cultivation effects (Shrum et al., 1998) and the accessibility model (Shrum, 2007), begins with general propositions based on the principles of heuristic/sufficiency and accessibility. Besides the motivation to process information, the ability to process information is also linked with processing strategies (Chaiken et al., 1989; Petty & Cacioppo, 1986).

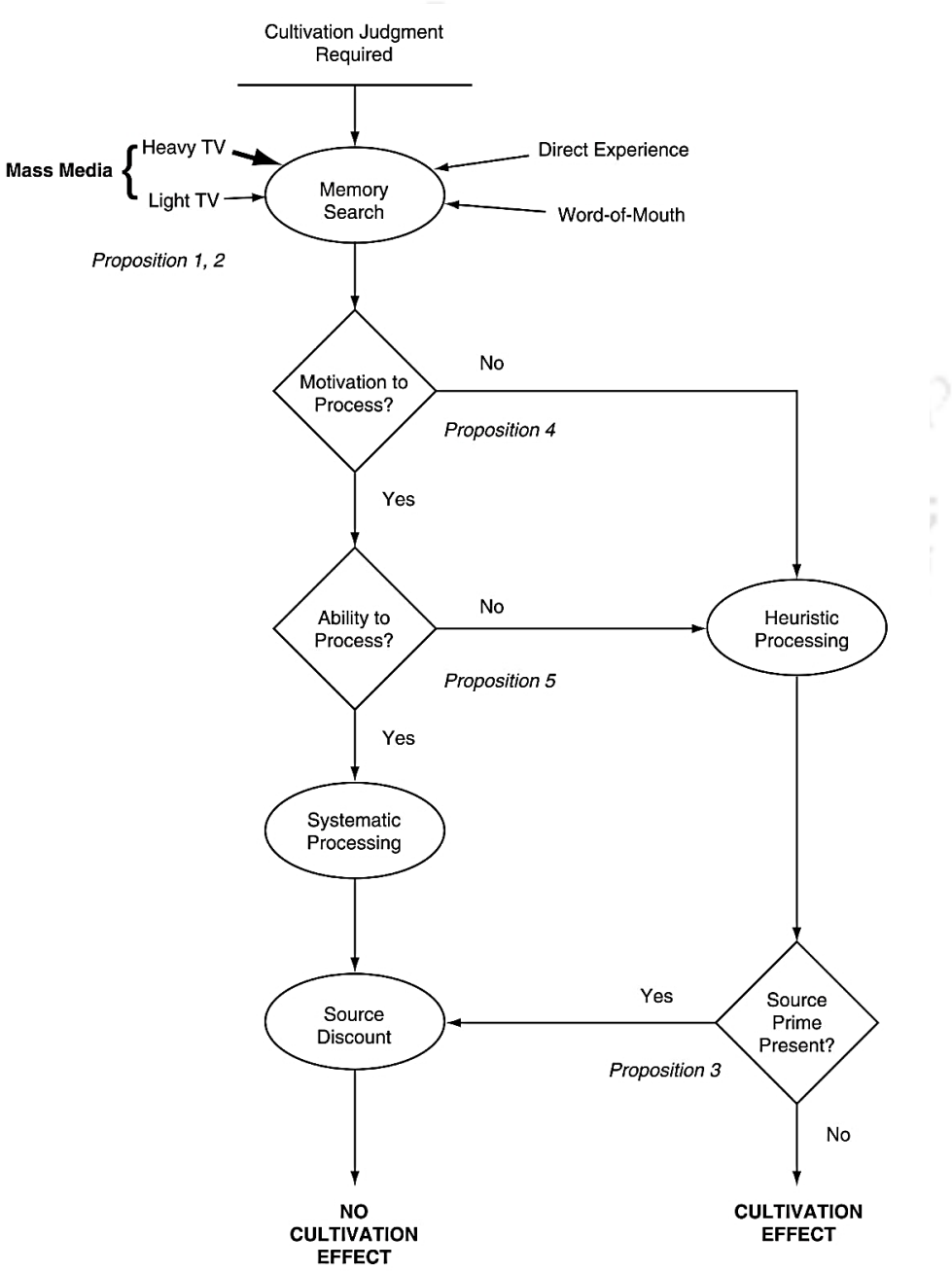


Fig 2.8 Flow Diagram of the Heuristic Processing Model of Cultivation Effects

2.8.11 Technological Determinism

The prevailing media technology in a society at any given time significantly shapes the thoughts, actions, and behaviours of its members (Nwanne, 2016). The broad introduction of technology for the general population suggests that these systems must be user-friendly even for those with lower intelligence to fulfil their purpose (Conrad, 1962).

From the perspective of technological determinism, McLuhan's statement, "the medium is the message," implies that a medium conveys an image or produces effects independent of the individual messages it carries (McLuhan & Fiore, 1967). Especially for interactive media, the perceived credibility or trustworthiness of the medium (Shimp, 1990) is likely to significantly influence its impact on consumers.

However, the idea that technology solely dictates how people interact with and respond to mass media is not universally accepted (De Fleur & Rokeach, 1982).

2.9 Digital Media

Traditional communication models suggest that mass communication is a one-to-many process, leading to the development of a passive mass "audience" (Gitlin, 1978). However, the current technological and informational environment is challenging many past assumptions, paradigms, and methods (Jones et al., 2004). Digital technologies are introducing new voices into the media landscape and breaking down old economic barriers to news production and distribution (Benkler, 2006; Castells, 2009).

Newsmakers, advertisers, start-ups, and notably, the people previously known as the audience, have been granted new freedom to communicate both narrowly and broadly, beyond the traditional structures of broadcast and publishing models (Anderson et al., 2015). While many barriers to previous mediums no longer exist, this does not imply the disappearance of long-standing institutions, interests, and learned behaviours (Benkler, 2006). The Internet is seen more as an additional delivery method and a supplementary channel for traditional entertainment and media services. Research indicates that online media content is more likely to be used as a functional supplement rather than a replacement for offline media content (e.g., Lin, 2001).

The International Society for Research on Internet Interventions defines Internet Interventions as "treatments, typically behaviourally based, that are operationalised and transformed for delivery via the Internet; usually, they are highly structured; self-guided or partly self-guided; based on effective face-to-face interventions; personalised to the user; interactive; enhanced by

graphics, animations, audio, and video; and tailored to provide follow-up and feedback, but do not include sites that just provide information" (Ritterband et al., 2006).

Understanding the role of new media in campaigns involves the concepts of interactivity, narrowcasting, and tailoring. Revolutionary advances in interactive technologies provide the means to expand the reach and impact of communication media.

Interactive media offers new capabilities (Burke, 1997). The most interesting and novel attribute of new media is their capability for interactivity, which is becoming increasingly more pronounced with the introduction of more advanced communication tools.

Communications can now be personally tailored to factors that are causally related to the behaviour of interest. Tailored communications are viewed as more relevant and credible, better remembered, and more effective in influencing behaviour than general messages (Kreuter et al., 1999). The CDC-sponsored Guide to Community Preventive Services has emphasised the importance of tailoring to individual and/or targeted population characteristics (Tufano & Karras, 2005). "Tailoring is a process of designing messages to reflect an individual's needs, interests, abilities, and motivations" (Kreuter et al., 2000). Researchers have reviewed studies (Rimal & Adkins, 2003) showing the positive outcomes (exposure, attention, use, recall, credibility, behaviour change) of campaigns using tailored messages in general, and online or digital media-based tailored messages in particular.

Compared to other modes of mediated communication channels, the relative advantage of the Internet as a communication medium lies in its technology fluidity. As the source is empowered to directly publish or broadcast content, the new media is becoming "a user-friendly mass media" (Morris, 1996). Communication flows "inwards" rather than in a left-to-right manner (Holmes, 2005). The Internet, therefore, provides its users with better control over the access, creation, distribution, and reception of information to and from other online users than any other mediated communication channel.

New media necessitates new approaches to the measurement of mass communication as a non-linear system of communication (Oleksandrivna, 2015). O'Sullivan and Carr (2018) introduced the mass personal communication model, which states that users use technologies in ways that expand the intersection of interpersonal communication and mass communication, calling for new frameworks.

Other models of Dominick (2006), Holmes (2005), Pavlik (1998), and Vivian (2006) account for the fact that even in a computer-mediated communication environment, no matter what

choices the users make within it, the outer limits are always pre-defined. Hoffman and Novak (1998) suggest an alternative model of many-to-many mediated communication, in which information or content is not merely transmitted from sender to receiver, but instead, mediated environments are created by the participants and then experienced.

With the advent of such overpowering new media, concepts such as communication design, media design, new media design, and aesthetic design have emerged. The concept of communication design, closely related to visual communication design and graphic design, includes the work of numerous scholars who use design as a mode of media research, as well as media innovation and development outside of academia, particularly in the media industries (Lovlie, 2016).

2.10 Communication, Culture, Context

A message is a compilation of signs that interact with receivers to generate meanings (Fiske, 2010). This interaction or negotiation occurs when the receiver interprets the signs and codes of the message based on their cultural beliefs and values.

Culture influences how individuals perceive the world, including their notions of right and wrong or appropriateness and inappropriateness. It often provides the lens through which they perceive communication and create messages (Sardi & Flammia, 2011; Varner & Beamer, 2010). Therefore, culture is a crucial aspect for communication designers to consider, especially when developing informational and instructional materials for audiences from different cultures.

Culture and language are closely linked. However, this connection involves more than just the language itself. The concept of rhetoric, or how one structures or presents ideas in a given language, is often as important as the vocabulary and syntax of the language itself. These rhetorical expectations can influence everything (Driskill, 1996; Tebeaux, 1999; Woolever, 2001).

Blake and Haroldsen (1975) suggest that people with similar social and demographic characteristics exhibit similar mass communications behaviour. Cultural groups that speak the same language can have their own perceptions of what are considered expected, acceptable, or credible ways to convey ideas (Driskill, 1996). Furthermore, individuals often use the rhetorical expectations of their native language and culture to assess the credibility and effectiveness of messages in other languages and constructed by members of different cultures (Ulijn, 1996).

Different cultures often have different expectations regarding visual communication. In some cases, these differences can involve what an item or object should look like to be recognisable (Atchison, 1994; Kostelnick, 1995; Gillette, 1999). In other cases, these differences can involve expectations of what constitutes an "appropriate" or a "credible" visual depiction of an object or a person (St. Amant, 2005). The same item can represent different qualities or traits depending on the culture of the related audience (Horton, 1993). Therefore, it is necessary to understand the expectations members of that culture have regarding the overall design of different communication materials (Yunker, 2003; Sun, 2012). Just because a given technology or communication product exists in multiple cultures does not mean that item will be used in the same way(s) – or at all – across cultures (Sun, 2012; Getto & St. Amant, 2014).

Foucault reminds us (Orgad, 2017) that the analysis of specific media images and narratives should always be situated in broader historical, social, cultural, political, and institutional contexts within which they are produced, disseminated, and consumed, and which they, in turn, shape. Research suggests that creating communication materials for one specific culture and then trying to adapt them for others is not always an effective approach. It is necessary to create materials that best address varying cultural expectations and conditions of use (Langmia, 2011; van Reijswoud & de Jager, 2011; Sun, 2012; Getto & St. Amant, 2014). These ideas of design and use are further complicated by the fact that no culture is a monolith. There are different groups within a given culture, each with different expectations and needs that reflect different attitudes, lifestyles, and situations (Yu et al., 2007; Getto & St. Amant, 2014). By identifying, understanding, and addressing the context or cultural factors, one can design more effective – and ideally, more usable – communication.

2.11 Communication Campaigns

Public communication campaigns can be broadly defined (Rogers & Storey, 1987) as

(1) purposive attempts
(2) to inform, persuade, or motivate behaviour changes
(3) in a relatively well-defined and large audience,
(4) generally for non-commercial benefits to the individuals and/or society at large,
(5) typically within a given period,
(6) by means of organised communication activities involving mass media, and
(7) often complemented by interpersonal support.

The use of digital media in campaigns extends the traditional definition a bit.

The success of media campaigns depends in part on

(a) whether the transmitted communications are effective in changing the attitudes of the recipients in the desired direction

(b) whether these modified attitudes in turn influence people's behaviours.

Campaigns aimed at increasing public awareness on common issues necessitate personal involvement of the audience in characters and content, combining perceived social norms with beliefs about the source's normative expectations. Messages should convey specific information, understandings, and behaviours that are accessible, feasible, and culturally acceptable (Rice & Atkin, 1989).

Understanding the general principles of communication, persuasion, and social change, along with the relationships among campaign components, is crucial for proper campaign design and evaluation. Before initiating campaigns, it is essential to review realities, sociocultural situations, and ethical considerations, identify target audiences, media usage patterns, social factors, and institutional constraints, and define meaningful and acceptable change objectives. It also involves identifying whether the campaign objectives are essentially creating awareness, instructing/educating, or persuading.

The new perspectives reconceptualize audience members as peers and collaborators in mutual and interactive change efforts. These approaches differ from traditional campaigns by emphasizing audiences' social and cultural contexts, prioritizing audience-derived goals over expert goals, and using audience networks to generate, frame, and share messages (Bracht, 2001; Dervin & Frenette, 2001).

In a comprehensive review of mass media programs addressing drug and alcohol-related social problems, Kinder, Pape and Walfish (1980) found that while these programs successfully increased participants' knowledge, there was limited evidence of their effectiveness in changing attitudes and behaviours.

Mendelsohn (1973) emphasized the importance of placing potential media recipients along a continuum based on their initial interest in a subject area to develop effective public information campaigns. Personal relevance emerged as a critical determinant of interest and motivation to process media messages.

Recent research on attitude and behaviour change sheds light on the inadequacies of some unsuccessful media campaigns, where the acquisition of knowledge failed to result in attitudinal or behavioural shifts. One possible explanation is that the acquired knowledge may

have been perceived as irrelevant by the audience or could have triggered unfavourable reactions. Another factor to consider is that even when favourable reactions occur, individuals may lack confidence in these thoughts, leading to diminished reliance and a lower likelihood of change. The majority of media messages are likely perceived as indirectly relevant, with few immediate personal consequences for individuals.

2.12 Summary

This chapter provides a review of communication models. It begins with traditional models that assume a passive mass audience and shifts to models focusing on systematic receiver differences. Besides Hall's idea of messages being open to multiple interpretations, models discussed include Carey's ritual model, Nair and White's participatory message development model, Westley and MacLean's one-way filtration model, and Lars' alternative model.

The chapter further discusses the complexities of measuring media effects and discusses Lasswell's model, Lazarsfeld's two-step flow model, Barcus's introduction of "professional intermediaries", and Newcomb's triangular model. It also presents Troldahl's two-cycle flow of communication, the O-S-O-R model, and the revised O1-S-R1-O2-R2 model.

The chapter then transitions to the uses and gratifications theory, discussing Katz's work, Klapper's call for expansion, and various proposed models. It also explores the potential root cause of third-person effects and the uses and dependency model. Several models aiming for a more interactive understanding of person-situation factors are presented, including the proportional change model, accumulated information model, belief certainty model, mass persuasion model, and self-efficacy model.

The chapter concludes with discussions on Gerbner's cultivation theory, the reception models of media texts, the heuristic processing model of cultivation effects, and the accessibility model. It also covers McGuire's communication/persuasion matrix model of persuasion, Krugman's transactional model, the mental model, Price and Tewksbury's model, Schramm's model, Thorson's model, the elaboration likelihood model of persuasion, the capacity model, Dervin's model, and the study of cognitive dissonance in mass communication.

Finally, the chapter discusses McLuhan's "the medium is the message" concept, Maletzke's model, O'Sullivan and Carr's mass personal communication model, the models of Dominick, Holmes, Pavlik and Vivian, Hoffman and Novak's alternative model of many-to-many mediated communication, Fiske's definition of message, Blake and Haroldsen's prediction, and Foucault's suggestion for analyzing media images and narratives.

CHAPTER 3: Insights from information design elements and principles

In this chapter, we examine the meeting points of design and communication and seek to gather insights on design intervention in mass communication.

3.1 Communication and Design

Designed artefacts offer a multitude of experiences, including sensory stimulation, assignment of meanings and various emotional responses (Desmet & Hekkert, 2007; Schifferstein & Hekkert, 2008). When users interact with these artefacts, their interpretations may align with the designers' intentions or diverge significantly. The interpretation process is inherently unpredictable as individuals construct unique meanings based on their context, motivation, and values.

The correlation between designers' intentions and users' interpretations has led many design theorists to perceive design as a form of communication (Crilly et al., 2008). From this viewpoint, numerous authors across diverse design disciplines have portrayed the artefact as a medium of communication. Notable examples include Norman's (1983) "system image" which mediates between the designer's conceptual model and the user's mental model, and Krippendorff and Butter's (1984) communication-centric representation of product semantics, which refers to the symbolic qualities of man-made forms in their usage context.

This perspective extends to various design disciplines. For instance, de Souza (1993) illustrates how software interfaces link programmers to users; Shedroff (1999) shows how producers impact their audience through information design; and Coates (2003) depicts how physical products act as intermediaries between corporations and designers, and consumers and the wider public. These viewpoints underscore that the interpretation of a designed artefact is independent of the original intentions.

Communication-based design models advocate for identifying processes that affect both the artefact and its user experience. Their portrayal of "communication as transmission" has significantly influenced general communication theory (Beniger, 1990) and design theory in particular. In design theory, they have inspired scholars to depict artefacts as message transmitters that consumers subsequently decode (e.g., Koenig, 1974; Broadbent, 1973).

Monö (1997) also proposes a model where the product serves as a device for designers to convey messages to users. This concept of "products as transmitters" is also evident in more specific design models that address issues of branding (Karjalainen, 2004), response to form

(Crilly et al., 2004), computer-aided design (Mengoni et al., 2006) and perceived quality (Forslund et al., 2006).

3.2 Information Design

The transfer of information, i.e., communication, can be influenced by a multitude of factors. Yet, the objective remains unaltered: to impart a particular "meaning" to an individual. As such, elements like substance and form play a pivotal role in shaping the usability of an information design product, given their significant impact on the process of evoking meaning.

3.2.1 Image as Information

Merleau-Ponty (1964) and other scholars have highlighted that language's origins are deeply rooted in non-verbal communication. Messages conveyed through words have often proven to be ineffective, even when terms like 'notice', 'attention', and 'careful' are employed (Silver & Wogalter, 1991).

Extensive research has been undertaken to ascertain the value of incorporating images in text. Such research primarily focused on the efficacy of images in educational texts and other literature. Numerous experiments have been conducted where images were either added to text or vice versa. As a result, we have become reliant on visual media that amalgamates images and text for information, education, and socialization (Twine, 2006).

In the realm of visual communication, the material image holds a pivotal role due to its capacity to simultaneously convey both explicit and implicit information. This dual nature of images allows for the process of connotation, which involves the construction of supplementary meanings based on an existing denotation.

The denoted aspect of an image is typically quite overt, presenting itself as a sign to be interpreted at face value. It unambiguously directs towards its intended meaning. Conversely, its connoted meanings are more implicit, suggested but not formally articulated.

This facet of visual communication encompasses elements that are culturally determined. Consequently, the potential for variability in interpretation escalates when the audience comprises individuals from diverse cultural or sub-cultural backgrounds.

This underscores the criticality of cultural context in the interpretation of visual communication, highlighting the complex interplay between denotation, connotation, and cultural background in the decoding of visual messages.

3.2.2 Design Principles for Information Design

In the realm of information design, understanding the pre-existing knowledge of the audience is paramount. This understanding facilitates the logical linkage of new information to that which is already known. Different research has suggested adherence to various design principles to enhance the visual efficiency of information designs:

- Principle of Restraint: The content and elements in the design should be limited to what is necessary for the target audience.
- Principle of Proximity: Informational elements should be physically moved together or apart based on their relevance to each other.
- Principles of Similarity, Consistency, and Repetition: The size, style, colour, and shape of elements should be used to demonstrate their relationships with other elements. Related elements should be matched, and unrelated ones contrasted.
- Principles of Hierarchy and Emphasis: Emphasis should be placed on what is most important. Information should be arranged from most to least important.
- Principles of Alignment, Unity, and Balance: Elements should be aligned with others to aid the audience in navigating through them.
- Principle of Clarity: Images used should be clear and legible.
- Principles of Figure/Ground and Clarity: The content should stand out clearly from the background, and should remain unobtrusive. Text should not be placed on a shifting background such as a photo or a gradient screen.
- Rule of Thirds: The visual space should be divided into nine rectangles, and one or more of the four intersection points should be used as the focal point(s).

These principles serve as a guide to creating visually efficient and effective information designs, thereby enhancing the communication of information to the audience.

3.2.2.1 Design Principles for Graphic Components in Information Design

In the realm of information design, the design principles for graphic components play a pivotal role. These principles are as follows:

- Proximity: The positioning of graphic components in close proximity to each other implies a strong correlation between the information elements. Conversely, components positioned at a greater distance from each other are less related.
- Similarity: A visual resemblance between components indicates a functional relationship. Components that appear similar are considered to have a similar hierarchical status. On the other hand, graphic components that appear different represent information elements with differing statuses.
- Prominence: The differences in prominence between graphic components serve as an indication of the degree of difference in hierarchical status between information elements. The larger the contrast between graphic components, the greater the difference in the status of the information (Dobson, 1979).
- Sequence: The sequence in which the graphic components are arranged indicates the order of the information elements. In printed information, this sequence is largely determined by the reading direction (Winn, 1993). It is important to note that sequential relations are interconnected; altering one will invariably affect the others.

These principles, when adhered to, can significantly enhance the effectiveness and efficiency of information design.

3.2.3 Readability

Numerous studies have delved into the legibility, readability, and usability of printed text and graphic products. For instance, a study by Gregory and Poulton (1970) explored the impact of right-justified and unjustified text on the readability and comprehensibility of reading material. The findings indicated that justification can influence readability, but the effect is largely dependent on the line length and the reading ability.

Most readability formulas operate on the principle of using only essential, simple, and familiar words while avoiding technical terms and industry jargon. These formulas evaluate a writing sample to estimate the level of education required for a reader to understand it. Examples of such readability formulas include the SMOG (Simple Measure of Gobbledegook) Formula, the Fry Readability Graph, the Gunning FOG Test, the Flesch-Kincaid Formula, and Forcast.

The Clear Language and Design Reading Effectiveness Tool from the Toronto East End Literacy Project also considers less quantifiable factors such as tone, structure, and appearance (space, legibility, alignment, graphics).

Research by Fillenbaum and Johnson-Laird & Stevenson suggests that people rarely remember short, meaningful information verbatim; instead, they infer the gist and remember that (Wright, 1998). This type of gist memory is susceptible to errors. Memory is influenced by both familiarity and quantity, implying that even a few steps in a new message can lead to memory problems. The most common types of errors include:

- Transposition errors caused by short-term memory processes
- Interpretation errors caused by prior knowledge
- Misunderstandings arising from linguistic processes
- Referential errors caused by action plans

People generally do not pay attention to all the mass media messages they encounter, except those related to their current goals. If their goals can be achieved or their questions answered without reading anything, that is usually the preferred option (Keller-Cohen et al., 1990). This implies that design should minimize factors that deter readers.

Research has found that people whose native language reads from left to right tend to start at the upper left. Therefore, it is recommended to place text along this natural eye path, as text generally requires the most effort for readers to follow. The lesser-travelled paths of the upper right and lower left corners can be reserved for images or artwork.

Empty space is also a crucial component and a valuable active design element. When used appropriately, it can enhance the digestibility of content. It serves to protect and isolate content from anything that competes for the reader's attention, both within and outside of the design.

3.2.4 Information hierarchy

When users encounter a visual, they instinctively assess the most significant object or information present and its relationship with other visible content and controls. Visual designers streamline this decoding process by establishing an information hierarchy using varied visual attributes.

Size, for example, is a potent tool in communicating information hierarchy. It is an ordered and quantitative variable, and people naturally arrange objects based on their relative size. Decoding other variables, such as shape, can become challenging when an object is extremely small or large (Bertin, 1983).

Similarly, position is another ordered and quantitative variable effective in conveying information hierarchy. The strategic placement of varied levels of visual components within a logical grid forms the fundamental design criteria for a communication tool (Salisbury, 2001).

3.3 Study of Colour

The study of colour has evolved through various stages in cultural history. It is believed that humans not only existed within a colourful environment but also actively engaged with it (Serov, 1997). Early Homo sapiens adorned their bodies with chalk, ochre, charcoal, and other pigments as part of their rituals. Over time, colours have played a significant role in shaping the history, emotions, and beliefs of diverse cultures.

3.3.1 Colour Philosophy

The philosophy of colour presents a dichotomy, contrasting ‘colour-as-in-physical-objects’ with ‘colour-as-in-experience’ (Maund, 1995). This conflict is further complicated by the fact that our understanding of colours is shaped by paradigms that rely on both objective observation and subjective perception. Some philosophical perspectives view colour as something that is mediated by its observer. In this context, colour translates the experience of its perception into new forms, partly influenced by cultural conditions (McLuhan, 1994).

3.3.2 Cultural Associations of Colour

Colours often carry multiple, sometimes conflicting, meanings that can vary based on the viewer’s culture, sensitivity, and level of awareness. This differentiation process is further stimulated at the cultural level by the natural environment (Gajanayake, 2019). Indeed, colour vocabulary serves as a specific socio-cultural marker (Galustyan & Papchenko, 2015).

Colour symbolism stems from cultural, mythical, historical, religious, political, and linguistic contexts, which largely dictate the proportionate ratios of colour. In India, for instance, the Sankhya philosophy associates Tama (darkness) with black, the colour of denial. Raja (passion) is linked with red, the oldest colour in human history, symbolising blood, fire, and love. Sattva (essence) is associated with white, expressing relief from any resistance and representing the exact opposite of black.

To select the right colours for our audience, we need to understand them better, considering not just their geographical location but also their origins, beliefs, concerns, and priorities (Batagoda, 2018). When working with a specific ethnic group, it is wise to consider their colour associations to maximise impact.

Colour interpretation varies with the socio-cultural environment. For example, the way humans associate colour to express sorrow and mourn for the deceased differs according to the norms, customs, and beliefs learned from each culture (Gajanayake, 2019). White is associated with funerals and death in Asia, while in many Western cultures, white is considered a wedding colour.

3.3.3 Colour Calculations

In the case of warning messages, the use of colour also needs to depend on the environment in which the message is placed (Young, 1991). A red warning in a predominantly red environment does not stand out. Warning messages should also be of high contrast relative to the background (Barlow & Wogalter, 1993; Sanders & McCormick, 1993). The colours red, orange, and yellow are commonly used in warnings to indicate different levels of hazard (Bresnahan & Bryk, 1975; Collins, 1983; Chapanis, 1994; Kalsher et al., 1995; Wogalter et al., 1995).

3.3.4 Colour as a Communicative Tool

Colour is a communicative tool. According to the Chicago School of Media Theory, the term "colour" refers to a basic and nearly immediate property by which something presents itself to its audience. Nearly every intense medium possesses, produces, or inspires a sense of colour. Colour is a visual quality, although non-visual media, such as sound and language, can also be said to possess characteristic colours. Hence, it has a ubiquitous relationship to communication media.

Colour is usually seen before imagery. In fact, colour is the first thing to be noticed and will be remembered for longer than text. Therefore, the fastest method to instantly communicate a message or a meaning through visuals is colour.

3.3.5 Experience of Colour

To perceive colour means to experience, to become conscious or aware. Colours may evoke associations with odour and taste, appear heavy or light, give tactile impressions, be associated with sound, and have volume and temperature associations. These associations are very real and play a vital role in the design of anything where colour is used to inform and communicate.

Temperature affects our eye's interpretation of a composition. Warm hues suggest aggression, sunlight, heat, stimulation, cheerfulness, heaviness, and dryness. Cool hues imply sky, water, distance, shadows, quiet, lightness, and wetness. The hottest of the warm colours is red, with red-orange offering the greatest heat. The coolest of the cool colours is blue, with blue-green

recognised as the coolest. Warm colours advance toward the viewer; cool colours retreat into the distance.

Gestalt psychologists such as Werner have reviewed phenomena in which sound affects colour perception. Krakov, Allen, and Schwartz found that loud noises and strong odours and tastes make the eye more sensitive to green and less sensitive to red (Birren, 1969). A noisy atmosphere will be experienced subjectively as noisier or more bothersome with glaring yellows or reds. High-pitched sounds may be compensated by olive green. Heavy odours are aided by brown-red and violet and compensated for by yellow-green and orange-yellow. Moist or damp conditions are aided by green-blue (maximum level) and compensated for by yellow-tan (sand).

Frieling (1957) conducted extensive research to assign certain sound associations to various colours. Research has shown associations of odours and tastes with colours also.

Table 3.1 Association of colour, sound, odour

Colour	*Sound*	*Odour*
	loud, trumpet	sweet, strong
	soft, delicate	sweetish, mild
	loud	strong
	dark, deep	musty, roast
	high-pitched	sour
	soft (when dull), sharp (when saturated)	sour, juicy
	distant, flute to violin	odourless
	sad, deep	narcotic, heavy, sweet

3.3.6 Design Functions of Colour

In design work, we use colour to create and support the information architecture of a composition or a message. Colour plays an important role in user experience and reader comprehension (Thurfjell, 2017).

Colour's most important functions are to provide visual and psychological information and to generate responses from the viewers. The designer can provoke various responses and so become the controller of what that viewer perceives. The viewer's attention must be captured

and held until the desired message is digested, and colour is the tool that can accomplish this goal.

3.3.7 Colour Variables

Poor application of colours can resist readers immediately after their attention has been aroused (Turnbull & Baird, 1968). Any choice should first consider the users' environment and match the colours in terms of the colour variables. Hue, saturation, and value are three variables that together can describe any colour.

Great differences in hue draw our attention quickly, but users often have multi-layered associations with hue. Memory, experiences, intelligence, and cultural background all affect the way a colour's impact can vary. Compositions often work best when one hue is dominant, working for the tonality of the piece and creating an intense lasting impression. Primary, secondary, and tertiary hues provide us with different visual reactions when used. The primary hues attract the eye; they are the most stable and the most easily recognised of the hues, and they offer the greatest contrast. We see all other hues in relation to primary hues.

The idea of lightness or darkness is meaningful primarily in the context of an object compared to the background. On a dark background, dark type is faint, whereas on a light background, dark type is pronounced. If a photo is too dark or too light, we can no longer perceive other details about it. People perceive contrasts in value quickly and easily, so value can be a good tool for drawing attention to elements that need to stand out. When analogous hues (adjacent to each other on a colour wheel) of the same or near value are placed next to each other they tend to blend into each other. This blending means that boundaries disappear.

Saturation draws attention similar to the way that hue and value do, that is, when there is a strong contrast at play. Though saturated colours can imply excitement and dynamism, it can also read as loud and inharmonious. With too much saturation across the palette, colour can compete with actual content.

3.3.8 Colour Harmony

Colour harmony is a concept that explains why certain colours blend well together while others clash. Here's a breakdown of some traditional colour harmonies:

- Monochromatic Harmonies: These are based on a single hue, but the hue's value and saturation are varied to create a harmonious blend.

- Analogous Harmonies: These combine up to three colours that are adjacent to each other on the colour wheel, creating a harmonious blend.
- Complementary Schemes: These are based on hues that are directly opposite each other on the colour wheel, creating a vibrant contrast.
- Analogous-Complementary Schemes: This is a modification of the complementary scheme. It is achieved by choosing two adjacent colours and combining them with the complement of one of the two colours.
- Split-Complementary Harmony: This consists of one colour and the two tones adjoining its complementary colour, offering a balance between contrast and harmony.
- Double-Complementary Schemes: These recommend the use of two closely related hues and their complements, creating a rich and complex harmony.

Understanding these harmonies can enhance our appreciation of colour and its impact on visual aesthetics.

3.3.9 Colour Vision

Vision is the mechanism for "visual perception" and a reconstruction of reality inside our mind. It is a complex mechanism that involves not just seeing, but also understanding and interpreting what we see. This process is influenced by our personal experiences and the knowledge we've accumulated since infancy.

Our brain plays a crucial role in this process. It analyses the images we see, using both innate and learned knowledge to reconstruct reality. This process is multi-linear and involves seeing things in juxtaposition, which influences not just how we perceive them, but also how we understand them.

Gestalt psychology suggests that our brain organises pieces of information into meaningful patterns. When we look at a scene, our minds intuitively grasp its full significance, grouping the array of stimuli to achieve simplicity. The brain also organises sensations by dividing information into regions that represent objects (figure) and the spaces between figures (ground).

Artists, architects, and designers have the power to influence the colour sensations of those who view their work. They can use colour in three distinct ways to create these sensations:

- Local or Objective Colour: This is the most natural use of colour, representing the true colours of objects.
- Optical Colour: This involves reproducing hues as seen in lighting conditions other than white daylight, such as in the rain, at sunset, or under indoor lighting.
- Arbitrary Colour: This allows the artist to impose their feelings and interpretation of colour onto the images, abandoning natural colour for the artist's choice.

Understanding the magic of colour vision can enhance our appreciation of the world around us and the art that seeks to represent it.

3.3.10 Colour Accessibility

Colour accessibility is a significant concern for many individuals who grapple with colour blindness, degenerative vision due to age or illness, or limited sight. As we age, our vision undergoes several changes that can impact how we perceive colours.

- Yellowing and Darkening: The lens and cornea of our eyes tend to yellow and darken over time, leading to a shrinking pupil size. This yellowing selectively blocks short wavelength light, causing blues to appear darker.
- Difficulty Discriminating Colours: Older individuals often struggle to discriminate colours that differ in their blue content. This includes shades like blue whites, blue-greys, green-blue-greens, and red-purples.
- Dimming of Colours: Ageing also results in all colours appearing dimmer, and the visual resolution becomes lower. For instance, a moderately bright yellow may appear brownish, and dimmer blues may appear black.

Understanding these challenges is crucial for creating inclusive and accessible designs that cater to a wide range of visual abilities.

3.3.11 Colour of Typography

Legibility, the cornerstone of graphic design, is heavily influenced by typography. It is important to note that visibility and the ability to attract are distinct from legibility or reading ease. The legibility of a particular ink colour can be influenced by the colour of the background or paper (Cheskin, 1954). The combination of typeface colours with black has been found to enhance legibility.

In an intriguing study, researchers controlled all variables on the printed page, allowing them to isolate the impact of colour. This meant that the content and typography remained identical, with the only differences being the type and quantity of colour used. The study's data revealed that colour was the most potent element in guiding the eye across the page (Bohle & Garcia, 1986).

The term "typographical order" refers to the arrangement that enables text to be noticed and read with ease. The sequence of black, grey, and white is recognized as the colour order in typography.

3.3.12 Interaction of Colour with Design Principles

Colour, when used in a design, interacts with various design principles such as rhythm, repetition, balance, proportion, scale, emphasis, and harmony.

- Rhythm: Rhythm brings order and unity to a design. The rhythmic use of colour is vital for achieving a cohesive outcome. A design lacking hue repetition may lack unity. Repeating a hue can create a sense of movement. Using a monochromatic (single hue) or analogous (adjacent hue) colour scheme is inherently rhythmic, as the limited palettes necessitate the repetition of hues in different forms. Tonality can heavily rely on repetition.
- Background and Foreground: In all visual experiences, objects are seen against a background. However, what is considered foreground and what is background can shift with a change of focus, allowing the periphery to become the centre. The background should be integrated with the images in a work. One simple method of achieving this integration is to repeat hues in the background that are also present in the foreground. This repetition forms a visual link between the background and the images, facilitating eye movement.
- Balance: Balance is concerned with the overall visual impact of a composition's components. Colour plays a crucial role in achieving the desired compositional effect.
- Emphasis: Emphasis involves creating areas of focus for the viewer. Colour is instrumental in attracting attention as it is perceived before form.
- Harmony: Harmony refers to the visual agreement among all parts of a work. Repetition is the simplest way to achieve harmony, and colour is the most common and significant means of repetition. Harmony can also be achieved through tonality. Even in a

composition with a diverse colour palette, adding the same colour to each palette colour can result in a harmonious composition.

In essence, colour is not just an aesthetic choice but a powerful tool that, when used effectively, can enhance and elevate the principles of design.

3.4 Summary

The chapter delves into the intersection of design and communication, exploring how designed artefacts offer sensory stimulation and emotional responses. It discusses how users' interpretations of these artefacts may align or diverge from designers' intentions, leading to the perception of design as a form of communication. The chapter also explores the role of images in conveying both explicit and implicit information, and the impact of cultural context on the interpretation of visual communication.

The chapter outlines various design principles for enhancing the visual efficiency of information designs, including restraint, proximity, similarity, consistency, repetition, hierarchy, emphasis, alignment, unity, balance, clarity, and the rule of thirds. It also discusses the principles for graphic components in information design, such as proximity, similarity, prominence, and sequence.

The chapter further explores the concept of readability, discussing various readability formulas and the common types of errors in memory recall. It emphasizes the importance of design in minimizing factors that deter readers and enhancing the digestibility of content.

The chapter discusses the concept of information hierarchy, explaining how visual designers use size and position to establish an information hierarchy and streamline the decoding process for users. The chapter underscores that design is not just about aesthetics, but is a powerful tool for enhancing communication and user experience.

The chapter also explores the multifaceted nature of colour, tracing its historical significance and the philosophical dichotomy between physical and experiential aspects. It discusses cultural associations of colour, highlighting how colours carry multiple meanings influenced by cultural, historical, and religious contexts. The chapter also delves into practical applications of colour in warning messages and as a communicative tool.

The experience of colour is explored, discussing how colours evoke associations with odour, taste, and sound, and have volume and temperature associations. The chapter also discusses the

design functions of colour, its role in user experience, and reader comprehension, and its ability to provide visual and psychological information.

The chapter further discusses colour variables, including hue, saturation, and value, and how they can describe any colour. It also covers the concept of colour harmony, explaining why certain colours blend well together while others clash.

The chapter concludes by discussing the interaction of colour with design principles such as rhythm, repetition, balance, proportion, scale, emphasis, and harmony. It emphasizes that colour is not just an aesthetic choice but a powerful tool that when used effectively, can enhance and elevate the principles of design.

CHAPTER 4. Measuring the Effectiveness of Different Mass Media Tools in Serving Awareness Messages to the Assam Tea Plantation Workers

To know the effectiveness of campaign messages, it is necessary to know which media the target audience uses, at what times, for how long or how many times, and in what combination, in what preference. Therefore, a field survey among the Assam tea plantation worker community was planned to measure the effectiveness of different mass media tools in communicating awareness messages among them**.** This seeks to address Research Question 2.

4.1 Sampling Design

Sampling Population: Tea plantation workers employed in the tea estates of Charaideo, Sivasagar and Golaghat districts in Assam

Sample size: 186

Test applied

Pearson Chi-Square, Likelihood Ratio, Linear-by-Linear Association for all cross-tabulations

Table 4.1 Sampling methods

Stage	Description
A	Convenience Sampling of the districts.
	Districts were selected based on their high tea garden concentrated areas and familiarity with the researcher.
B	Purposive Sampling of the tea estates.
	Within the selected districts, the selection of tea gardens was made based on the size of the tea gardens, ownership of the tea gardens, and on the availability of permission/consent to access the workers' colonies, viz. the 'coolie lines'.
C	Simple Random Sampling of the tea plantation workers.
	The respondents were selected among the tea plantation workers within the selected gardens using Simple Random Sampling.
	Since written records of date of birth were not available in most of the cases, especially in this community, age estimation was applied.

Fig 4.1 One of the field survey sites (Photograph: Researcher)

4.2 Survey Tool

- A structured schedule was prepared to gain insight into the effectiveness of mass media tools among Assam tea plantation workers.
- Only closed-ended questions were included because the survey is a quantitative study.
- Data collection was done with community participation to reduce apprehension of being examined or investigated.
- The responses were taken in the Sadri dialect and Assamese language. Although due to the lack of a script of Sadri, the questionnaire was in Assamese, the researcher, being a native of the tea plantation areas, explained the questions in Sadri to the respondents who did not understand Assamese.

4.2.1 Variables: 15 questions were set so that the following 7 indicator variables can be measured.

Table 4.2 Indicator variables

SL No.	Indicator Variable
I	Seeing banners or posters within the last 6 months
II	Listening to programmes on tea workers on the radio
III	Watching and understanding government ads or public awareness announcements on television
IV	Understanding loudspeaker announcements made in the tea estate area
V	Seeing government awareness messages during movie shows
VI	Seeing and understanding government ads and announcements on mobile phone
VII	Knowing government schemes through any media tool.

Fig 4.2 The 'garden show' cinema as a mass communication tool, 2022

(Photograph: Researcher)

Fig 4.3 Television network at a tea workers' residential colony, Charaideo district in Assam, 2021 (Photograph: Researcher)

Fig 4.4 Installation of public information banners (Photograph: NHM Assam website)

4.3 Data Tabulation

The data collected was processed through the software of Statistical Package for Social Sciences (SPSS), and tabulated as follows:

Table 4.3 Respondent structure

Category	Classification	Frequency	Percent	Valid %	Cumulative %
Gender	Female	141	75.8	75.8	75.8
	Male	45	24.2	24.2	100.0
Age	Up to 18 years	38	20.4	20.4	20.4
	19 to 40 years	135	72.6	72.6	93.0
	Above 40 years	13	7.0	7.0	100.0
Education	No formal Education	23	12.4	12.4	12.4
	Class I to V	22	11.8	11.8	24.2
	Class VI to X	94	50.5	50.5	74.7
	Above X	47	25.3	25.3	100.0
	Total	186	100.0	100.0	

Table 4.4 When did the workers see a poster or banner on public awareness/ scheme?

Classification	Frequency	Percent	Valid %	Cumulative %	95 % CI	
Within 3 months	14	7.5	7.5	7.5	3.70	11.35
3 to 6 months	17	9.1	9.1	16.7	4.96	13.32
6 to 12 months	110	59.1	59.1	75.8	52.01	66.27
Not in a year or do not remember	45	24.2	24.2	100.0	16.52	28.65
Total	186	100.0	100.0			

Table 4.5 (If poster/banner seen) What were the poster/banners about? (Multiple options allowed)

Responses	Frequency	Percent	% of cases
Education	3	1.9%	2.3%
Health or nutrition	31	19.5%	23.5%
Cleanliness or sanitation	113	71.1%	85.6%
Women or children	8	5.0%	6.1%
Something else or do not know	4	2.5%	3.0%
Total	204	100.0%	120.5%

Table 4.6 (If poster/banner seen) Was there any picture or photo on the poster or banners?

Responses	Frequency	Percent	Valid %	Cumulative %	95 % CI	
No	5	3.5	3.5	3.5	0.0	4.5
Yes	136	96.5	96.5	100.0	93.4	100.0
Total	141	100.0	100.0			

Table 4.7 (If poster/banner seen) Did the workers read the text of the poster or banners?

Responses	Frequency	Percent	Valid %	Cumulative %	95 % CI	
No	106	75.2	75.2	75.2	66.4	81.1
Yes	35	24.8	24.8	100.0	17.6	32.0
Total	141	100.0	100.0			

Table 4.8 (If poster/banner seen) What mostly attracts the workers towards the poster/banners? (Multiple options allowed)

Responses	Frequency	Percent	% of cases
Image	131	83.4%	Colour
Colour	21	13.4%	15.1%
Text or slogan	5	3.2%	3.6%
Total	157	100.0%	112.9%

Table 4.9 (If poster/banner seen) Poster/banners are put up in which language? (Multiple options allowed)

Responses	Frequency	Percent	% of cases
English	13	8.8%	9.4%
Assamese	132	89.8%	95.0%
Tea tribal dialect or other or do not remember	2	1.4%	1.4%
Total	147	100.0%	105.8%

Table 4.10 Do the workers listen to special programmes on tea workers on the radio?

Responses	Frequency	Percent	Valid %	Cumulative %	95 % CI	
Yes	10	5.4	5.4	5.4	2.1	8.6
Listen to the radio but not programme on tea workers	17	9.1	9.1	14.5	5.0	13.3
Do not listen to the radio	159	85.5	85.5	100.0	80.4	90.6
Total	186	100.0	100.0			

Table 4.11 Do the workers watch government ads or public awareness announcements on TV?

Responses	Frequency	Percent	Valid %	Cumulative %	95 % CI	
Yes, understand the ads	7	3.8	3.8	3.8	1.0	6.5
Watch TV, not seen such ads	49	26.3	26.3	30.1	20.0	32.7
Watch ads, do not understand much	43	23.1	23.1	53.2	17.0	29.2
No TV or do not watch	87	46.8	46.8	100.0	37.4	51.8
Total	186	100.0	100.0			

Table 4.12 Do the workers understand the announcements made through loudspeakers?

Responses	Frequency	Percent	Valid %	Cumulative %	95 % CI	
Yes	109	58.6	58.6	58.6	51.5	65.7
No	26	14.0	14.0	72.6	8.9	19.0
No such announcement made	51	27.4	27.4	100.0	21.4	34.5
Total	186	100.0	100.0			

Table 4.13 During movie shows in the tea estate, have the workers seen government advertisements or public awareness announcements?

Responses	Frequency	Percent	Valid %	Cumulative %	95 % CI	
No	127	68.3	68.3	68.3	57.6	71.5
Yes, understand	7	3.8	3.8	72.0	1.0	6.5
Yes, do not understand much	17	9.1	9.1	81.2	5.0	13.3
Do not watch movies or do not know	35	18.8	18.8	100.0	13.1	24.5
Total	186	100.0	100.0			

Table 4.14 Have the workers seen any play or theatre in or around the tea estate area?

Responses	Frequency	Percent	Valid %	Cumulative %	95% CI	
No	170	91.4	91.4	91.4	86.7	95.0
Yes	16	8.6	8.6	100.0	4.5	12.7
Total	186	100.0	100.0			

Table 4.15 Do the workers watch videos on the mobile phone?

Responses	Frequency	Percent	Valid %	Cumulative %	95 % CI	
No	74	39.8	39.8	39.8	32.7	46.9
Yes	112	60.2	60.2	100.0	53.1	67.3
Total	186	100.0	100.0			

Table 4.16 (If videos watched) Do the workers come across government ads or public awareness messages on the phone?

Responses	Frequency	Percent	Valid %	Cumulative %	95% CI	
Yes, understand	43	38.4	38.4	38.4	29.2	47.5
Yes, do not understand	27	24.1	24.1	62.5	16.1	32.2
No or do not remember	42	37.5	37.5	100.0	28.4	46.6
Total	112	100.0	100.0			

Table 4.17 Have the workers seen these facilities around the tea estate? (Multiple options allowed)

Responses	Frequency	Percent	% of cases
Auditorium	16	13.7%	14.3%
LED projector	4	3.4%	3.6%
Public library	10	8.5%	8.9%
None of these	87	74.4%	77.7%
Total	117	100.0%	104.5%

Table 4.18 How do the workers know about government schemes etc.? (Multiple options allowed)

Responses	Frequency	Percent	% of cases
Poster or banner	28	19.4%	28.9%
Newspaper	9	6.3%	9.3%
TV	16	11.1%	16.5%
Mobile phone	5	3.5%	5.2%
Loudspeaker	9	6.3%	9.3%
Friends or others	71	49.3%	73.2%
Local market	6	4.2%	6.2%
Total	144	100.0%	148.5%

4.4 Data analysis

The study reveals that 16.52 to 28.65% population have not seen or do not remember seeing any poster or banner on public awareness in a year. Those who saw, mostly (around 59.1%) did so within 6 to 12 months of the survey. Out of them, most (71.1%) were about cleanliness or sanitation. 93.4 to 100% population glanced upon some picture or photo on the poster or banner. 66.4 to 81.1% population did not read any text on the poster or banner that they saw. Image mostly (83.4) attracts them towards the poster or banner while text/ words/ slogans only attract 3.4%. people, 89.8% of which were in Assamese. 80.4 to 90.6% population do not listen to the radio, while 5 to 13.3% listen to the radio and still have not heard any special programme on tea workers. 20.0 to 32.7% population do watch television but have not seen any public awareness announcement on TV, while 17.0 to 29.2% have watched such ads/announcements and yet do not understand much. 51.5 to 65.7% population understand the announcements made through loudspeakers in the tea estate area. 57.6 to 71.5% population have not seen any public awareness announcement during (beginning/interval) movie shows in the tea estate area, while 5.0 to 13.3% have watched such ads/announcements and yet do not understand much. 86.7 to 95.0% population have not seen any play or theatre around the tea estate area. 53.1 to 67.3% have watched a video on the mobile phone. Among them, 29.2 to 47.5% have come

across public awareness messages on the phone. 74.4% of respondents have seen none of the auditorium, LED projector or public library in or around the tea estates.

With Pearson Chi-squared statistic 2 at appropriate degrees of freedom corresponding to $p < 0.005$, we have observed that there is strong evidence of an association between the variables.

4.4.1 Measurement of Effectiveness

The data gathered from the field survey to measure the effectiveness of different mass media tools in communicating awareness messages among the Assam tea plantation worker community has been tabled.

Table 4.19 Effectiveness of media tools among Assam tea plantation workers

Indicator variable	Sample result	Estimated upper bound at 95% CI	Normalised result	Normalised upper bound
I1. Seeing a poster/banner in 6 months	16.7	24.7	0.17	0.25
I2. Listening to tea workers' programmes on the radio	5.4	8.6	0.05	0.09
I3. Watching and understanding awareness announcements on TV	3.8	6.5	0.04	0.07
I4. Seeing awareness messages during movie shows	58.6	65.7	0.59	0.66
I5. Understanding loudspeaker announcements played in the tea estates	6.0	19.8	0.06	0.20
I6. Seeing and understanding government ads and announcements on mobile phone	38.4	47.5	0.38	0.48
I7. Knowing government schemes through any media tool	46.5	61.0	0.47	0.61
Measured Effectiveness			0.25	0.33

Applying data normalisation, the effectiveness parameter of mass media tools among Assam tea plantation workers has been set between 0 and 1, as shown in Table 4.19. The median of this normalised data set, 0.5, is set as the parameter for reaching average effectiveness based on seven indicator variables.

Fig. 4.5 is a visualisation of the indicator variables (1 to 7) and their measurement of effectiveness in terms of the normalized results and their normalized upper bounds availed with SPSS.

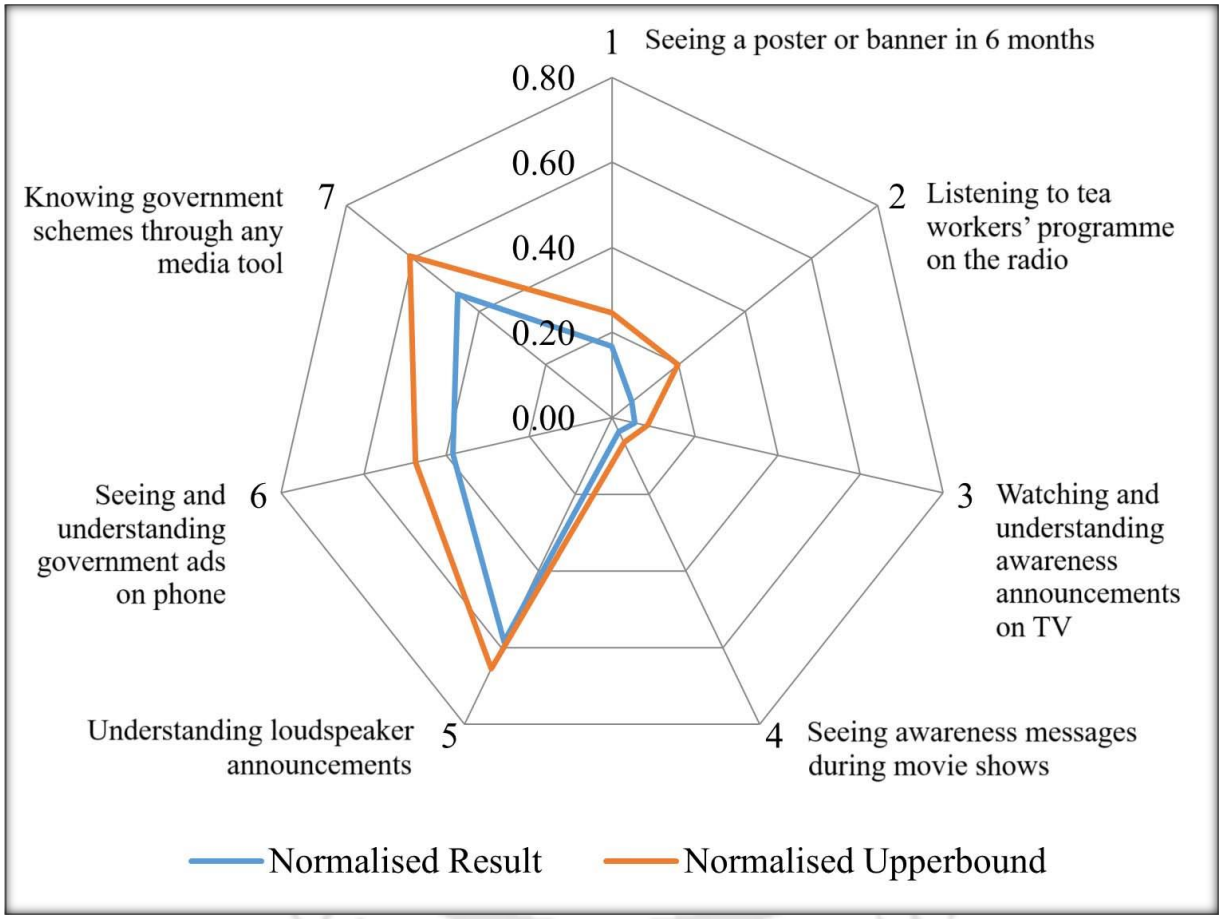


Fig. 4.5 Measurement of the effectiveness of media tools among Assam tea plantation workers

4.5 Findings

The findings of the primary survey show that the reach and effect of the mass media tools among the population under study have been poor. Beyond seeking entertainment, tea plantation workers hardly expose themselves to media for acquiring information. The study reveals that almost one-third of the Assam tea plantation workers have not seen or do not remember seeing any poster or banner on public awareness or government schemes or

campaigns in a year. Most of these campaign materials were about cleanliness or sanitation. Three to 4 out of 5 persons under study did not read any text on the poster or banners.

Almost all of them who saw a poster or banner in a year glanced upon some picture or photo on the poster or banners, and most of them found themselves attracted to images rather than text/ words/ slogans on the posters or banners. The posters were mostly in the state language. The study reveals that radio in its present format as a tool of communication has faded out, and special radio programmes produced exclusively for the tea workers are hardly attractive to them. About one-fourth of those who have watched government advertisements or public awareness announcements on television do not understand them much. This contrasts with the revelation that more than half of the population under study understands the announcements made through loudspeakers in the tea estate area.

This also throws more light on the fact that familiarity with the context has helped the population under study understand the messages. More than half of the population has not seen any government advertisement or public awareness announcement during (beginning/interval) movie shows in the tea estate area. Play or theatre around the tea estate area is a rare activity. The majority of the population watched video on a mobile phone.

The respondents were not asked whether they own a phone or not, therefore this data includes those having access to others' phones. Among them, more than a quarter have come across government advertisements or public awareness messages on the phone. 3 out of 4 workers have seen no auditorium, LED projector or public library in or around the tea estates. Half of those studied used to get information about government schemes or benefits from friends or others.

4.6 Results

The effectiveness matrix suggests that while 0.5 was set as the average effectiveness parameter, none of the indicators could achieve it except indicator 5 which (loudspeaker) is a local arrangement for mostly tea estate-related messages and not a mass media tool.

The survey findings thus suggest that there is a need for a new method and approach for creating an altogether different experience for consumption of mass communication among Assam tea plantation workers to enlighten them as informed citizens. This understanding of the mass communication processes indicates the prospect of design intervention in awareness campaigns for the Assam tea industry workers [Goduka & Das, 2023].

Chapter 5: Exploring Design Intervention in Mass Communication

Having considered the findings from the secondary and primary surveys, we learn that the communication models and existing media tools have remained inadequate in effectively serving necessary awareness and empowerment messages to the Assam tea plantation worker community. This gap indicates a need for new methods and approaches to deal with the unique challenges involved in designing mass media.

5.1 Mass Communication Campaign Tools in Assam Tea Plantation Areas

First, communication tools designed for mass awareness and disseminated among the public, including the tea workers' community, were collected from the media team and the website of National Health Mission Assam, which is the government's flagship mission.

Since this study was carried out mostly during COVID-19 and its aftermath, the communication campaigns chosen, as a case, have been limited to the health sector only, and out of the 20 visual (posters and banners) campaign tools, 5 are from the government's awareness campaigns on novel coronavirus.

Fig 5.1 Government campaign on Hepatitis

Fig. 5.2 Government campaign on Leptospirosis

Fig 5.3 Government campaign on Pneumonia

Fig 5.4 Government anti-tobacco campaign

Fig 5.5 Government campaign on mental illness

Fig 5.6 Government campaign on health hazards by floods

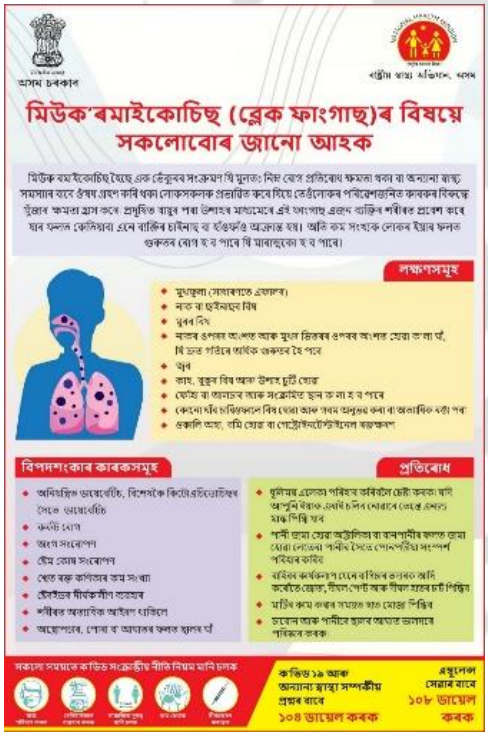


Fig 5.7 Government campaign on black fungus

Fig 5.8 Government campaign on mushroom poisoning

Fig 5.9 Government campaign on diarrhoea

Fig 5.10 Government campaign on food poisoning

Fig 5.11 Government campaign on Integrated Child Development Scheme (1)

Fig 5.12 Government campaign on Integrated Child Development Scheme (2)

Fig 5.13 Government campaign on Dengue and mosquito

Fig 5.14 Government campaign for awareness of Japanese encephalitis and mosquito

Fig 5.15 Government campaign on family planning

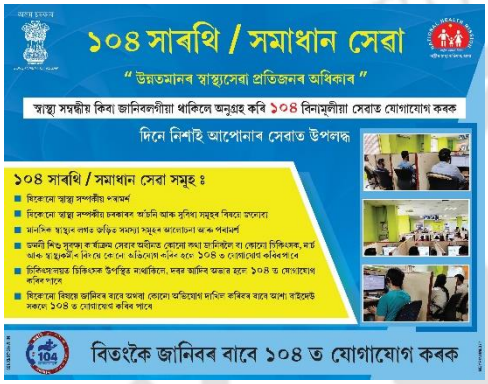


Fig 5.16 Government campaign on emergency service

Fig 5.17 Government campaign on novel coronavirus (1)

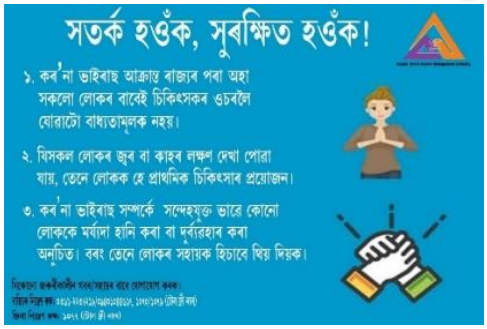


Fig 5.18 Government campaign on novel coronavirus (2)

Fig 5.19 Government campaign on novel coronavirus (3)

Fig 5.20 Government campaign on novel coronavirus (4)

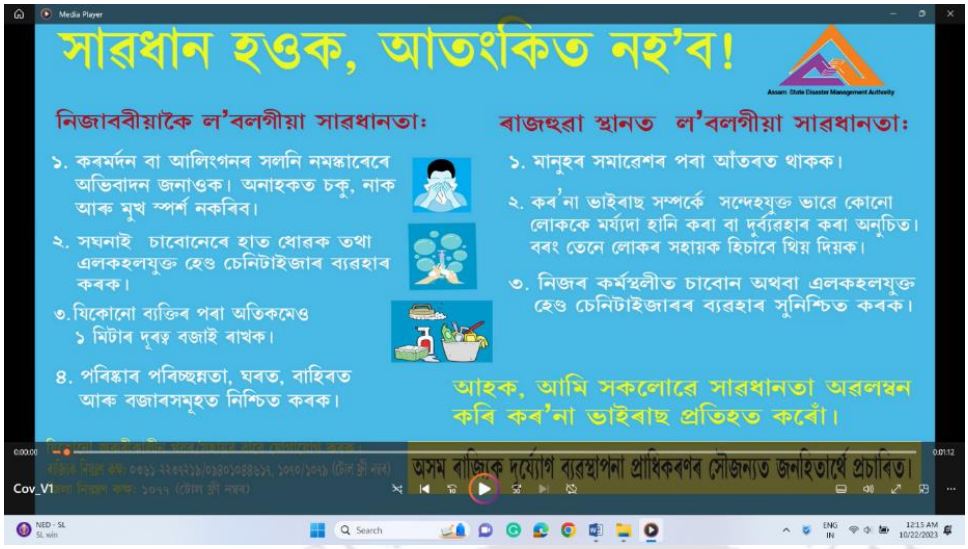


Fig 5.21 Thumbnail of a government video campaign on novel coronavirus (1)

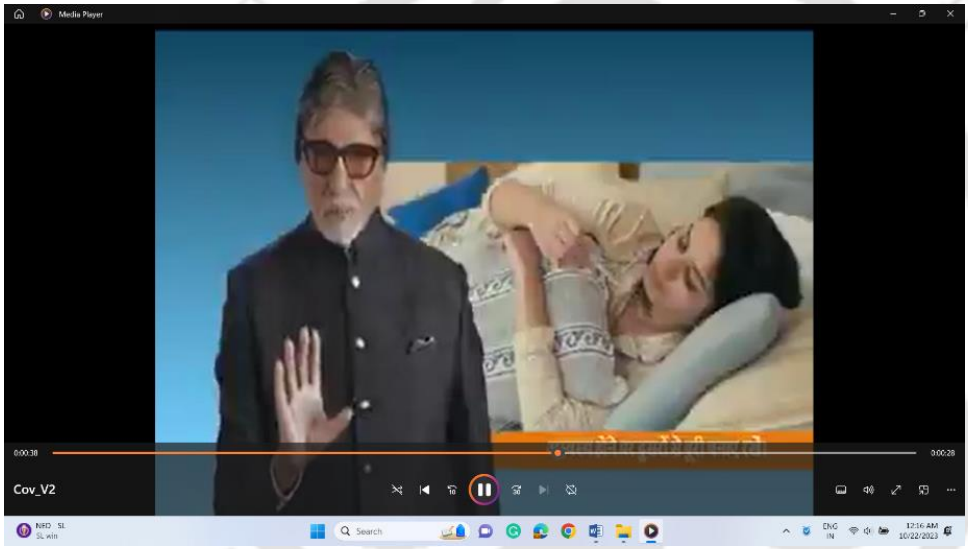


Fig 5.22 Thumbnail of a government video campaign on novel coronavirus (2)

5.1.1 Colour Palettes of the Visual Campaign Tools

The colour palettes of the visual communication tools disseminated among the public, including the tea workers' community by government agencies are extracted to analyse the dominant colours used by the message designers. The colour palettes in Tab 5.1 depict 5 dominant colours of each media tool, that is, 100 colours from 20 tools. The analysis of these colour palettes will reveal the common pattern, if any or the lack of it.

Table 5.1 Colour palettes of the visual campaign tools

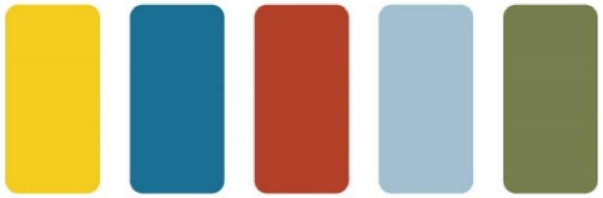
Sl No.	Poster title	Color palette
Fig 5.1	Government campaign on Hepatitis	
Fig 5.2	Government campaign on Leptospirosis	
Fig 5.3	Government campaign on Pneumonia	
Fig 5.4	Government anti-tobacco campaign	
Fig 5.5	Government campaign on mental illness	

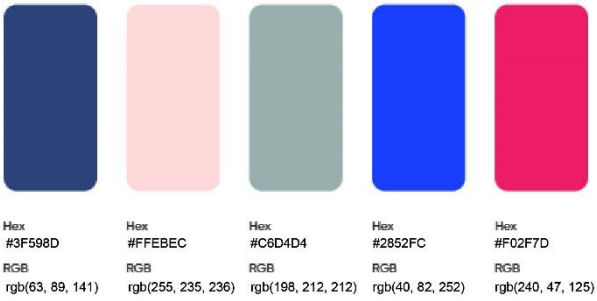
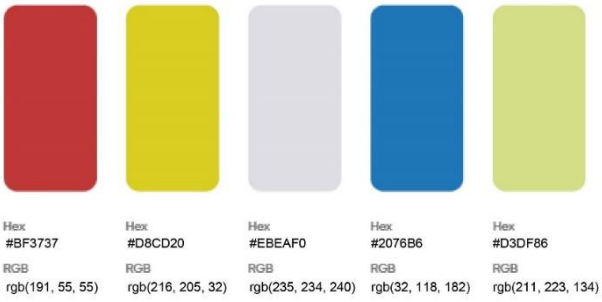
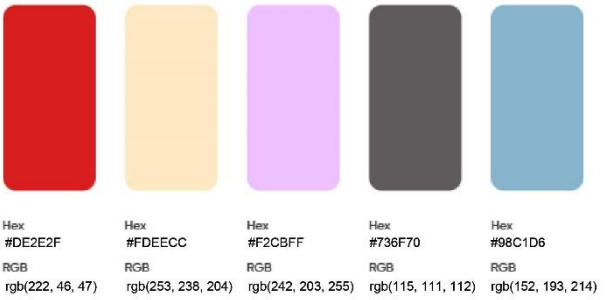
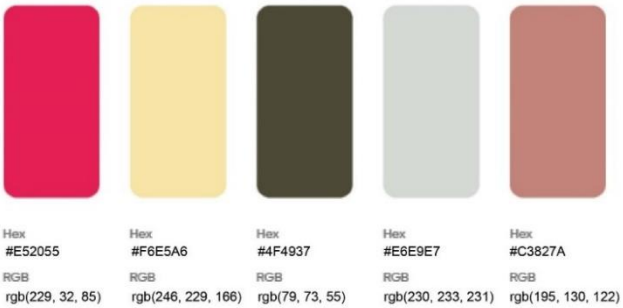
Fig 5.6	Government campaign on health hazards by floods	
Fig 5.7	Government campaign on black fungus	
Fig 5.8	Government campaign on mushroom poisoning	
Fig 5.9	Government campaign on diarrhea	
Fig 5.10	Government campaign on food poisoning	

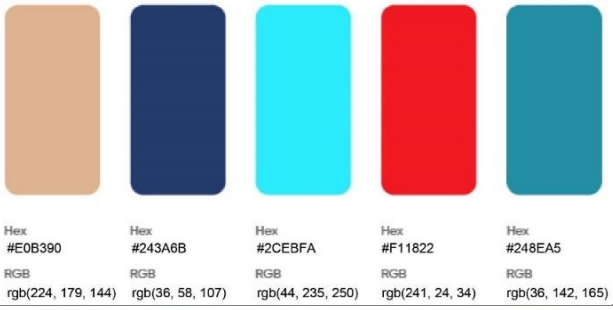
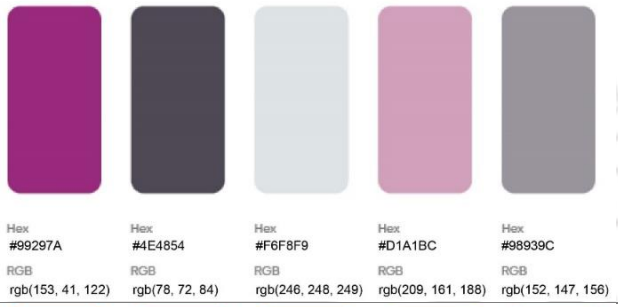
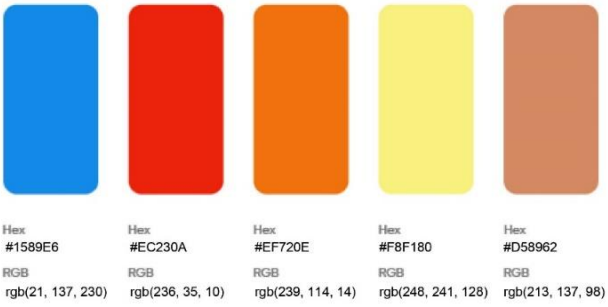
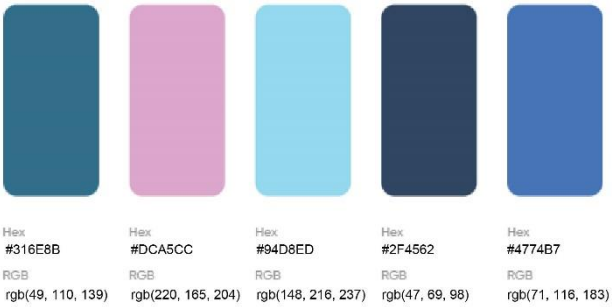
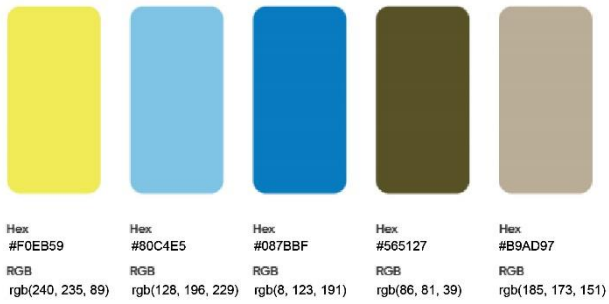
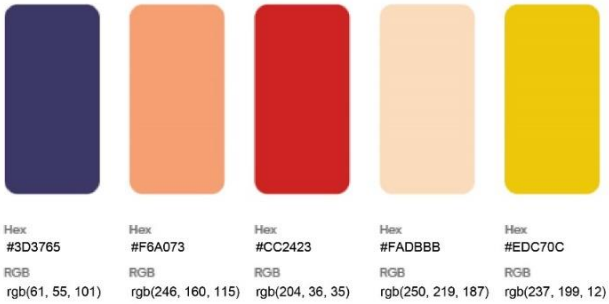
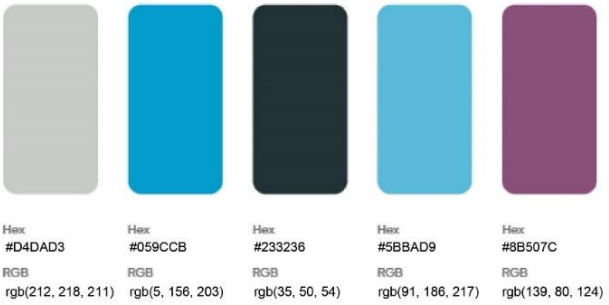
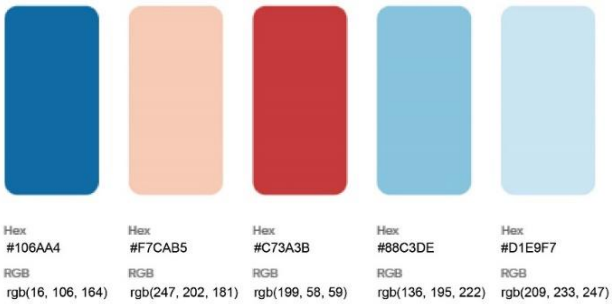
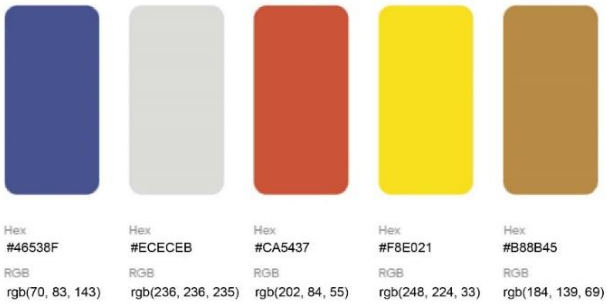
Fig 5.11	Government campaign on Integrated Child Development Scheme (1)	
Fig 5.12	Government campaign on Integrated Child Development Scheme (2)	
Fig 5.13	Government campaign on dengue and mosquito	
Fig 5.14	Government campaign for awareness of Japanese Encephalitis and mosquito	
Fig 5.15	Government campaign on family planning	

Fig 5.16	Government campaign on emergency service	
Fig 5.17	Government campaign on novel coronavirus (1)	
Fig 5.18	Government campaign on novel coronavirus (2)	
Fig 5.19	Government campaign on novel coronavirus (3)	
Fig 5.20	Government campaign on novel coronavirus (4)	

It is evident from Table 5.1 that the colour palettes of these communication tools follow no particular pattern or semantics. All the 20 visual media tools extracted had different colour palettes with varied and random dominant colours. This indicates a total lack of strategic

pattern or semantic appropriateness in the choice of colour palettes for designing effective mass media messages intended to be used by the public including the tea plantation workers.

5.2 Colour Palette of the Tea Plantation Worker Community

Following is a collage of images representing the tea tribe community areas.

Fig 5.23 Images representing the tea tribe community areas (All photographs: Researcher)

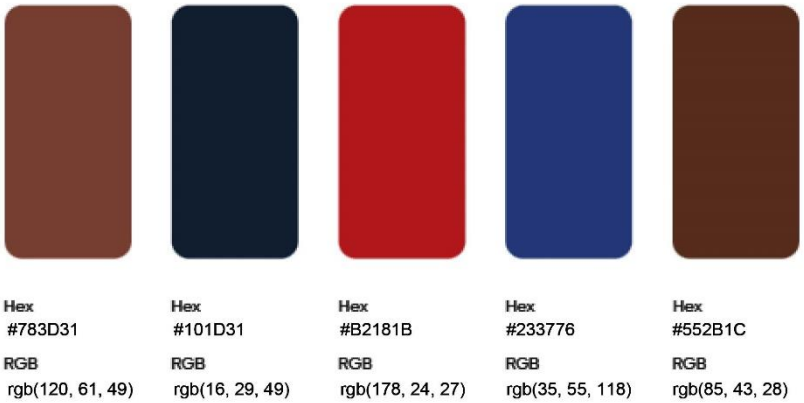


Fig 5.24 Colour palette extracted from the images of the community

The colour palette of the tea plantation worker community, as depicted in Fig 5.24, has no commonality with the 20 existing campaigns' colour palettes as seen in Table 5.1.

5.3 Poster analysis

Out of 20 visual campaign tools designed and disseminated by the government agencies, the following one (Fig 5.25) is chosen for further analysis given the current (during this phase of the research) relevance of the wide-scale spread of Japanese Encephalitis among the tea plantation areas. The poster is analysed as per the worksheet designed and developed by the Education Staff, National Archives and Records Administration, Washington, DC 20408.

Fig 5.25 Government campaign for awareness of Japanese encephalitis and mosquito _re

Table 5.2 Poster analysis worksheet

Sl.	Query	Response
1	What are the main colours used in the poster? what makes you feel?	• This single poster has 5 dominant colours: blue, bright yellow, orange, red, light yellow, besides black and white. People hardly remember many colours in one frame. • The poster has an orange-blue pairing, which creates a distracting shimmering effect. • When primary hues red, yellow, and blue are used over large areas, they overshadow everything else and the colours end up being seen before the imagery. • The human eye most easily sees yellow, especially when placed against black. It is used to denote danger, and also on school buses. This poster uses red on yellow instead. • The primary hues red, yellow, and blue function well when used in the upper portions of objects or compositions. Using blue in this poster at the bottom of the poster composition imparts a jarring effect and eclipses all important information around it, causing the viewer to take a second or third look to comprehend the imagery.

2	What shapes and forms (if any) are used in the poster? How are they? Are they clear, memorable, dramatic?	• Rectangular, oval, circular. • Overuse of rectangles. • Not memorable or dramatic. • The elements do not add to the retention power of the user.
3	Are the lines in the poster direct your attention as viewers? How?	• The lines in the poster do not direct viewers' attention, except the line in the middle. • The placement of informational elements and overlap of text colour with the background has adversely affected the view. • The viewer's eye movement becomes much more fluid when the white or light values are on the right-hand side of the composition progressing to the black or dark-value hues on the left. This poster ignores this.
4	Are the messages in the poster primarily visual, verbal, or both?	• All textual, except the small images encircled in round shapes, which are also incomprehensible due to size.
5	Who do you think is the intended audience for the poster?	• Entire Assam, especially the Japanese encephalitis-infected areas in the tea estates.
6	What does the poster maker hope the audience will do?	• Follow safety precautions from mosquitoes carrying the Japanese encephalitis virus.
7	What do you think about the balance of the design? How is the space used? Do they create the impression of equality of weight and importance?	• The entire space is cluttered with hardly any white or negative space. • So many colours, shapes, and a huge amount of text.

		• The poster suffers from the lost-and-found contour effect as its shapes and forms are visible, while the encoded visual information melts into the colour backgrounds. • The carnival effect of having a crowded colour palette overwhelms users and limits their ability to communicate. • The lack of a shared colour tonality destroys the unity of the composition.
8	The most effective posters use elements that are unusual, simple, and direct. Is this an effective poster?	• Presence of too many focal points to concentrate upon. • An entire piece covered in an array of colours and patterns loses impact. • Not an effective poster.

5.4 Intervention Experiments

The approach of intervention in message design for the tea plantation worker community is to catalyse the process of understanding the user context and to use the pattern of context as the base for effective mass communication.

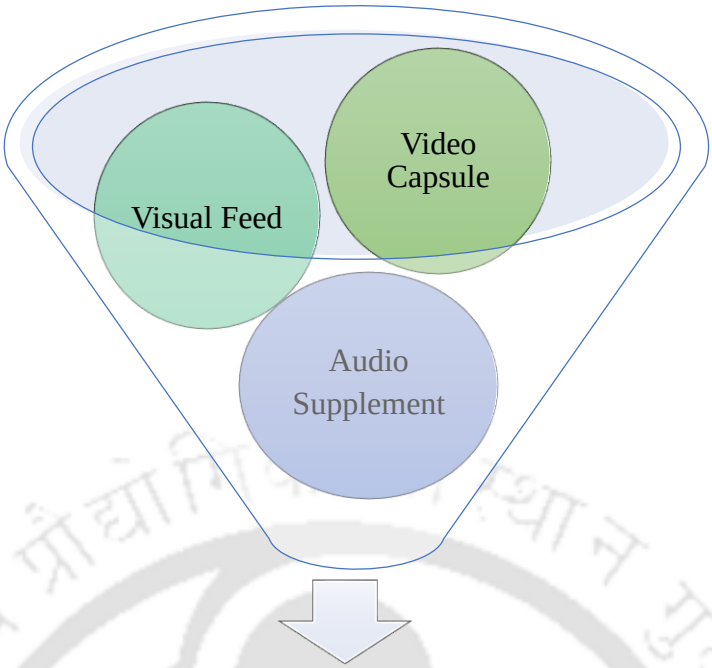
5.4.1 Media Tools for the Proposed Message Design

The message was designed in 3 media tools concurrently to attain the optimum level of the desired communication effect. This can also enhance accessibility for individuals with vision or hearing impairments, such as older adults in the tea tribe community.

A. Visual

B. Audio

C. Video



Optimum level of the desired communication effect

Fig 5.26 Media tools for the proposed message design

5.4.2 Media Tool A – Visual

The following visual media tool was designed given the current (during this phase of the research) relevance of the wide-scale spread of Japanese Encephalitis within the tea estate areas. The sole focus is on carrying the core message to motivate the tea plantation worker community to use mosquito nets. The colour palette of this media tool is inspired by the tea plantation worker community's colour palette as displayed in Fig 5.24.

Fig. 5.27 Alternative communication tool on Japanese encephalitis

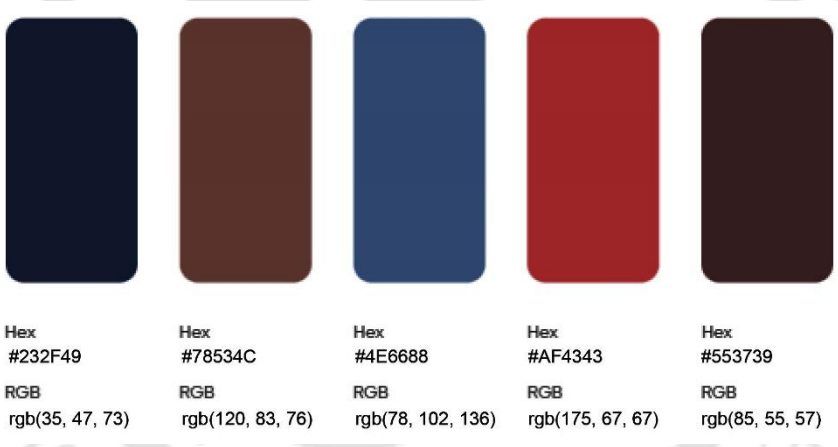


Fig. 5.28 Color palette of the alternative media tool A

5.4.3 Media Tool B - Audio Track

The research period was confronted by the COVID-19 lockdown, restrictions and precautions. There was an all-out communication campaign by the government health departments and missions. Amid such a critical situation, an awareness audio was produced exclusively for the Assam tea plantation workers.

The OneDrive link is: Audio_CoronaLockdown_TeaLabourers_Awareness_Designed by SureshGoduka_IITG.mp3.mp3 [Duration: 150 Seconds]

- The audio was sent to Charaideo district administration in Assam, which is surrounded by several large tea estates.
- The district administration played the audio on their regular loudspeaker systems set up for daily news dissemination aired by All India Radio, Dibrugarh Centre.
- The audio was consecutively played in several tea estates in the designated settlements of tea plantation workers' families.

5.4.4 Media Tool C – Audio-Visual (Video)

For awareness of COVID-19, the audio prepared (Media Tool B) was designed as a video exclusively for the Assam tea plantation workers.

The OneDrive link is: Video_CoronaLockdown_TeaLabourers_Awareness_Designed by SureshGoduka_IITG.mp4.mp4 [Duration: 116 Seconds]

- The video was sent to the Tea Research Association – TRA. (TRA was founded in 1964, initially as the scientific department of the Indian Tea Association in 1900. It runs Tocklai Tea Research Institute Jorhat. Transfer of technology to its member estates is carried out through its network covering 1,076 tea estates spread over Assam, Tripura, North Bengal, Darjeeling and Indo-Nepal border region Terai).
- TRA sent the video to their member tea estates for the widest possible use and shared it on TRA's official page (www.tocklai.org).
- The video was selected amongst the top 20 ideas to solve complex social issues arising due to pandemics in the Design Challenge conducted by the Internet and Mobile Association of India.

5.4.4.1 Replicability of the message design

In view of the acceptability of the media tool C, the West Jaintia Hills district administration, the Government of Meghalaya, requested a video for the Khasi community. Utilising the video message design as in media tool C, another video was thus conceived for the Khasi community. The district administration disseminated it to the community members. It was well received among them. This validated the replicability of the concept among different communities in different contexts.

The OneDrive link is: khasi final.mp4 [Duration: 188 Seconds]

5.5 The Model Framework

The next step in model development is to integrate the steps into a conceptual framework. The framework is presented in the form of 3 levels, which specify a series of 12 steps, designated by bullet points in the flow diagram. Each step can have an impact on one or more of the preceding or successive step(s).

Table 5.3 Model flow

Level	Step	Action
1	**I**	Identify intended users
	II	Identify the common variables of user context
	III	Identify the points of interaction between the media tool and the media users
	IV	Identify message design elements
2	**V**	Create message for media tool A (visual)
	VI	Disseminate A
	VII	Create message for media tool B (audio)
	VIII	Disseminate B
3	**IX**	Create message for media tool C (video)
	X	Disseminate C
	XI	Review message design elements as required
	XII	Repeat level 2 and 3 as required

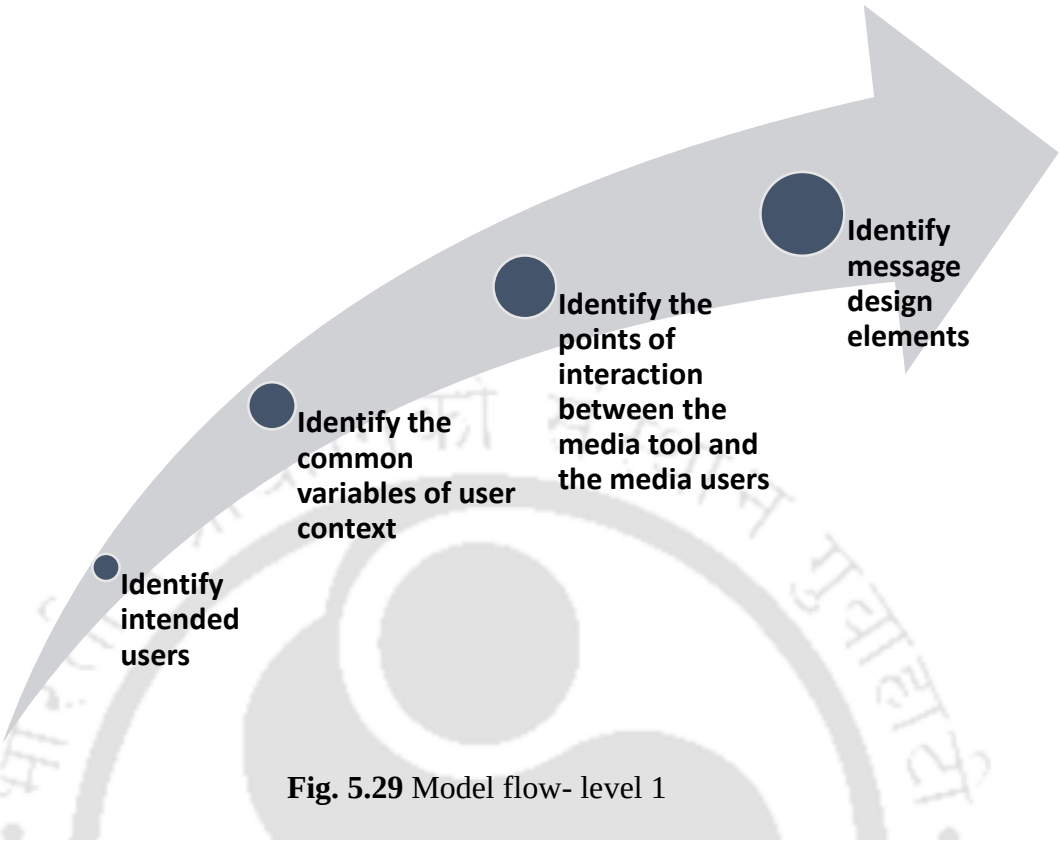


Fig. 5.29 Model flow- level 1

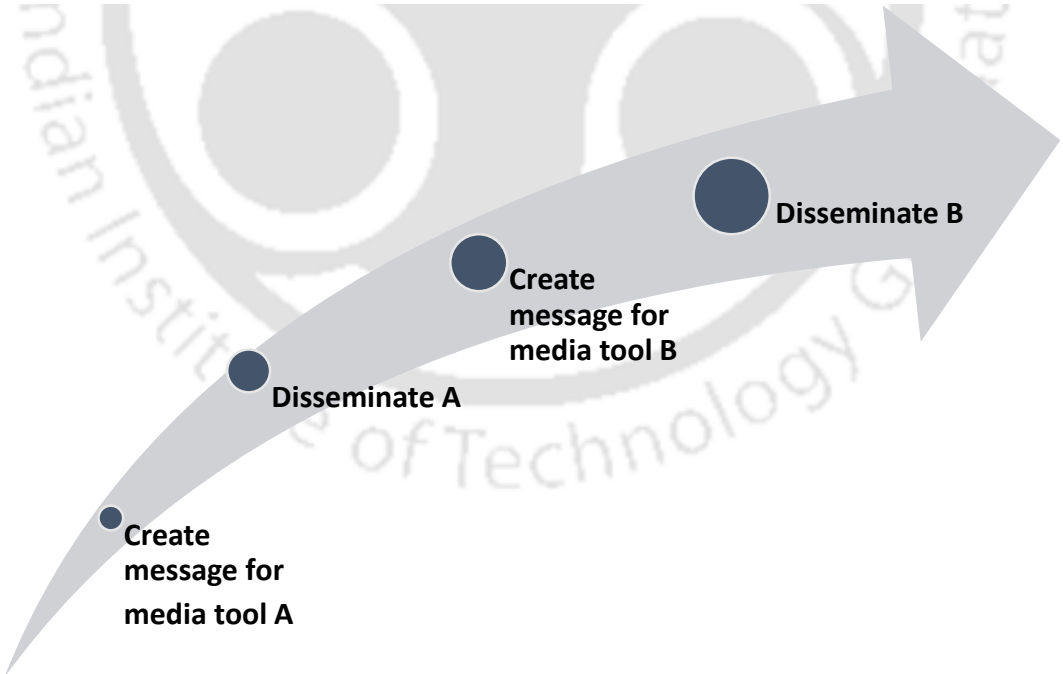


Fig. 5.30 Model flow- level 2

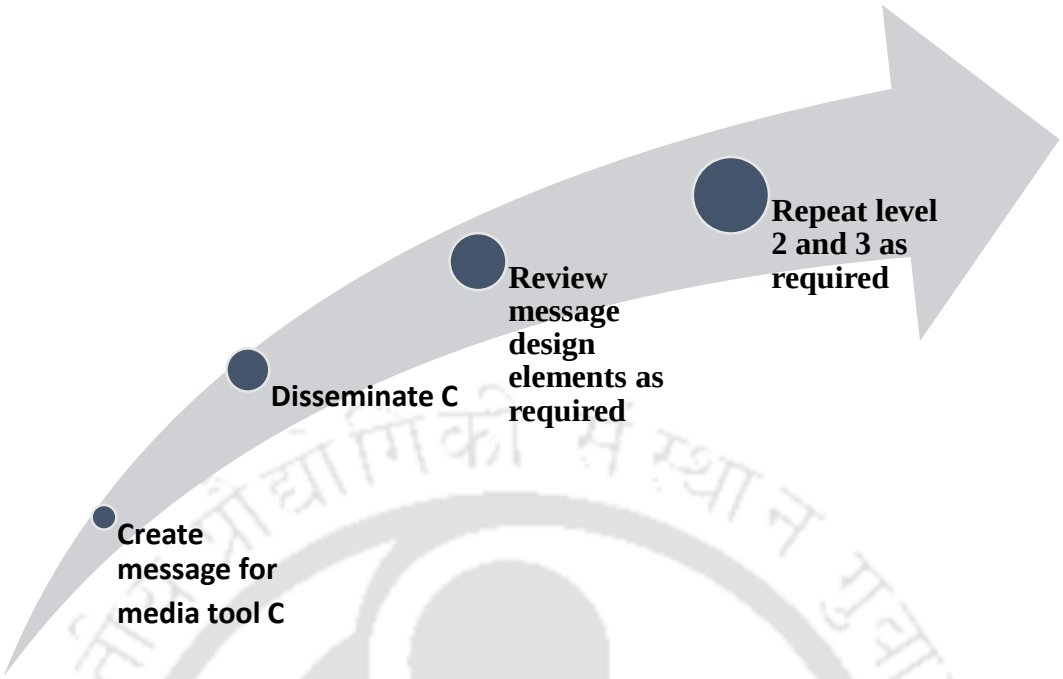


Fig. 5.31 Model flow- level 3

5.6 User Validation

Chosen campaigns on:

1. Japanese encephalitis (visual)
2. COVID-19 precautions (audio-visual)

Media tools exposed:

1. A campaign video disseminated by the government on COVID-19 precautions [Duration: 66 Seconds]: Corona Awareness-Video-1 by govt_Hindi.mp4
2. Another campaign video disseminated by the government on COVID-19 precautions [Duration: 72 Seconds]: Corona Awareness-Video-2 by govt_Assamese.mp4
3. Alternative projected video on COVID-19 precautions [Duration: 116 Seconds]: Video_CoronaLockdown_TeaLabourers_Awareness_Designed by SureshGoduka_IITG.mp4.mp4
4. A visual message disseminated by the government on Japanese encephalitis: Govt visual message on JE.jpg
5. Alternative projected visual message on Japanese encephalitis: Projected visual message on JE.jpg

5.6.1 Expert Preview

Before the model was tested among the end users, expert previews of the proposed message designs were conducted. The experts represent different backgrounds and belong to the intellectual/educated/learned few among the tea tribe community.

5.6.1.1 Participant Profile

- Makhanlal Barhoi, former Chairman, Golaghat Municipal Board
- Soneswar Barhoi, executive editor, Janani Barta, a tea garden centric newspaper
- Ramakanta Bhatta, teacher and writer
- Dr Ananta Tasa, general surgeon
- Dhanudhar Karmakar, a veteran cultural organiser
- Sushil Suri, associate professor, Sonari Collage
- Mintu Tanti, journalist and writer

5.6.1.2 Interview Protocol

An interview protocol was strictly followed during interaction with each of the experts.

Table 5.4 Interview protocol steps

Step	Description
I	Each participant is interviewed in isolation, rather than in a group. A one-on-one setting promoted comfort on the part of the participant and ensured that individual views were not lost.
II	Interviews were limited to at most an hour per person.
III	Interviewees were exposed to Media Tool either 1 or 2 followed by 3, and 4 followed by 5.
IV	The participants were asked their opinion on the projected tools 3 and 5 in comparison to 1/2/3.
V	Interviews were conducted at different places, mostly at residences.
VI	A summary of qualitative indications of participant feedback was prepared.

Fig. 5.32 Expert Preview 1

Fig. 5.33 Expert Preview 2

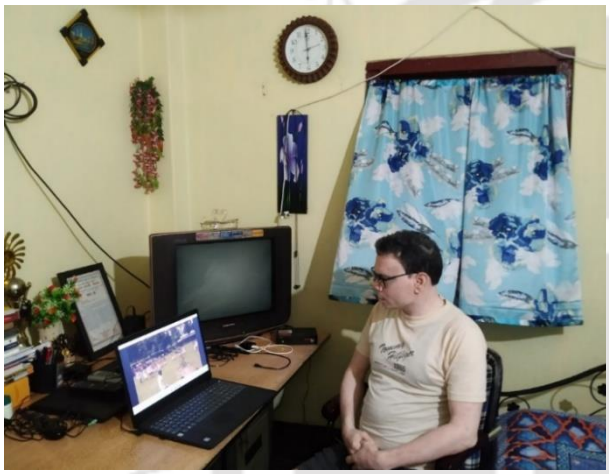


Fig. 5.34 Expert Preview 3

Fig. 5.35 Expert Preview 4

5.6.1.3 Summary of Qualitative Indications

All the experts recognised the need and acknowledged the role of the projected media tools in augmenting awareness among tea plantation workers. They agreed that context is missing in the existing mass communication messages. In their view, the proposed tools will help the community notice, comprehend and act on the messages.

5.6.2 User Validation Test

To measure the effectiveness of messages in a mediated environment, it is crucial to validate the proposal among real-world end users. This validation helps assess whether the intervention meets its objectives within the context for which the message is intended.

According to researchers, the optimal way to ascertain if the proposed message designs will be understood is to test them on a representative sample of the target audience (Lerner & Collins,

1980; Wogalter et al., 1987). An open-ended response test, where participants interpret a shown message, is considered the best method (Dewar et al., 1994).

In such testing scenarios, it is estimated that around 80% of usability issues can be identified with just 4 or 5 subjects, with the initial subjects revealing the most significant insights. To be more confident, perhaps 6 to 10 subjects may be required (Virzi, 1992).

It is also observed that people's comprehension of media messages and their expression of the resulting mental representations fade quickly, often within the experimental setting's timeframe (Farrar & Krcmar, 2006; Josephson, 1987; Roskos-Ewoldsen, 1997). In these tests, the effect can persist for up to 15 or 20 minutes (Srull & Wyer, 1979). Studies indicate that subjects forget a third of what they've learned after 20 minutes (Ebbinghaus, 1902).

Multiple studies have demonstrated that the findings from such testing are reliable in real-world applications (Zwaga et al. eds., 2003).

Table 5.5 Methodology for user validation

Sl No.	Description
I	Projective Technique was applied to measure and compare the effectiveness of existing and proposed mass media tools.
II	Subjects were chosen from among those communities who would be using the designs.
III	Appropriate locations were set up, at the users' own home or workplace.
IV	The subjects were exposed to the messages and the time it took participants to respond to each message was measured.
V	The subjects' task was to spell out their own understanding of the messages shown.
VI	For the alternative messages, 'experimental illiteracy' was imposed, implying that the complete lack of text meant that past experience with the written language was of no help in understanding the messages.
VII	The subjects were not told that the time they were taking to respond was being studied to avoid taking pressure or making a hurry.
VIII	Data was recorded using a mobile phone camera and a diary. Two persons were involved in the testing. One (the researcher) with the subject, prompting questions where necessary; another (a volunteer) recording the sessions.

Table 5.6 Field protocol for user validation

Step	Activity
I	Establishing rapport with tea estate manager/ *babu* (official)/ *sardar* (supervisor).
II	Obtaining permission/ go-ahead.
III	Finding locations that approximate the actual context of use.
IV	Selecting/finding users.
V	Briefing the users about the intention and the process.
VI	Reassuring subjects that testing is to evaluate the message design and not the person.
VII	Preparing them for consent to appear in a face-to-face recorded test.
VIII	Flashing a video (part of the government campaigns) in front of the subject.
IX	Inducing the subject to process the message.
X	Videotaping of the moment of exposure, the concrete interaction between the message and its user during the playing/ viewing of the video.
XI	Flashing a visual media tool (part of the government campaigns) in front of the subject, once the video is complete in Step VIII is complete.
XII	Inducing the subject to spell out the meaning - what message/disease the video and the visual talk about.
XIII	Recording the subject's response in real-time, the speed and accuracy in performing the tasks, from the moment of completing Step XII.
XIV	Observing the subject's actions in recalling information from memory, with their comments and efforts on decoding meanings.
XV	Confirmation of feedback.
XVI	Repeating steps VIII to XV with a different (projected) video and visual message, keeping other variables including the legibility distance constant.
XVII	End of interaction.

5.6.2.1 Participant Profile

- Total users 25
- A representative mix of gender, age and education; randomly picked from their worksites and house/quarters

Table 5.7 Profile of participants of user validation test

Category	Classification	Frequency	Percent	Valid %	Cumulative %
Gender	Female	15	60	60	60
	Male	10	40	40	100.0
	Total	25	100.0	100.0	
Age	Up to 18 years	5	20	20	20
	19 to 40 years	16	64	64	84
	Above 40 years	4	16	16	100.0
	Total	25	100.0	100.0	
Education	No formal Education	3	12	12	12
	Class I to V	14	56	56	68
	Class VI to X	5	20	20	88
	Above X	3	12	12	100.0
	Total	25	100.0	100.0	

5.6.2.2 Field Sites

Sites were chosen within the following tea estates:

1. Napuk T.E.
2. Suffry T.E.
3. Khona T.E.

Fig. 5.36 One of the testing sites (Photograph: Researcher)

SITE 1: Tea workers' colony. House. Interior and Exterior

1a. Tea workers' colony. House. Interior.mp4

1b. Tea workers' colony. House. Exterior.mp4

Fig. 5.37 User testing 1

Fig 5.38 User testing 2

SITE 2: Tea estate pathway

2. Tea estate pathway.mp4

Fig. 5.39 User testing 3

Fig. 5.40 User testing 4

SITE 3: Tea factory

3. Tea factory.mp4

Fig. 5.41 User testing 5

Fig. 5.43 User testing 7

Fig. 5.42 User testing 6

Fig. 5.44 User testing 8

SITE 4: Tea plucking site

4. Tea plucking site.mp4

Fig. 5.45 User testing 9

Fig. 5.46 User testing 10

Video recording of entire field validation

Field Validation with the researcher.mp4

5.6.2.3 Feedback Measurement

The ease of understanding is the most important index of a message's effectiveness. Therefore, the two indicators of user validation were set as: Task success and Time taken, defined as follows:

- **Task success** = Comprehension of the meaning of the message, denoted by 100 or 0, where 100 = Success, and 0 = Failure
- **Time taken** = Reaction time to spell out the feedback

We determine the following 4 Variables to measure the comparative validation test:

- **Task success (Present)** = Success (or Failure) in comprehending the meaning of the existing media tool (messages disseminated as part of the government campaigns).
- **Task success (Projected)** = Success (or Failure) in comprehending the meaning of the projected alternative media tool (message)
- **Time taken (Present)** = Count of time (in seconds) taken by the user(s) to spell out (field protocol step XIII) the feedback (success or failure) to the existing media tool (messages disseminated as part of the government campaigns) on screen, as recorded on the videotape time code.

- **Time Taken (Projected)** = Count of time (in seconds) taken by the user(s) to spell out (field protocol step XIII, post-XVI) the feedback (success or failure) to the projected alternative media tool (message) on screen, as recorded on the videotape time code.

Table 5.8 User validation data [Consolidated data sheet of all exposed media tools]

User	Time taken (seconds)		Task success	
	Present	Projected	Present	Projected
1	24	11	0	100
2	65	12	0	100
3	8	5	100	100
4	58	10	100	100
5	18	12	0	100
6	21	7	0	100
7	6	4	0	100
8	20	6	0	100
9	25	8	0	100
10	24	12	0	100
11	32	10	0	100
12	28	14	0	100
13	30	11	0	100
14	20	16	0	100
15	24	8	0	100
16	25	10	0	100
17	8	5	100	100
18	13	2	0	100
19	22	8	0	100
20	9	3	100	100
21	12	4	0	100
22	21	14	0	100
23	28	6	0	100
24	30	7	0	100
25	25	6	0	100

5.6.2.4 Testing of User Data

T-test for time taken

P value and statistical significance:

The two-tailed P value is less than 0.0001

By conventional criteria, this difference is extremely statistically significant.

Confidence interval:

The mean of Time Taken (Present) minus Time Taken (Projected) equals 15.40

95% confidence interval of this difference: From 10.33 to 20.47

Intermediate values used in calculations:

t = 6.2748

df = 24

Standard error of difference = 2.454

Group	Time Taken (Present)	Time Taken (Projected)
Mean	23.84	8.44
SD	13.58	3.73
SEM	2.72	0.75
N	25	25

T-test for task success

P value and statistical significance:

The two-tailed P value is less than 0.0001

By conventional criteria, this difference is extremely statistically significant.

Confidence interval:

The mean of Task Success (Present) minus Task Success (Projected) equals -84.00

95% confidence interval of this difference: From -99.44 to -68.56

Intermediate values used in calculations:

t = 11.2250

df = 24

Standard error of difference = 7.483

Group	Task Success (Present)	Task Success (Projected)
Mean	16.00	100.00
SD	37.42	0.00
SEM	7.48	0.00
N	25	25

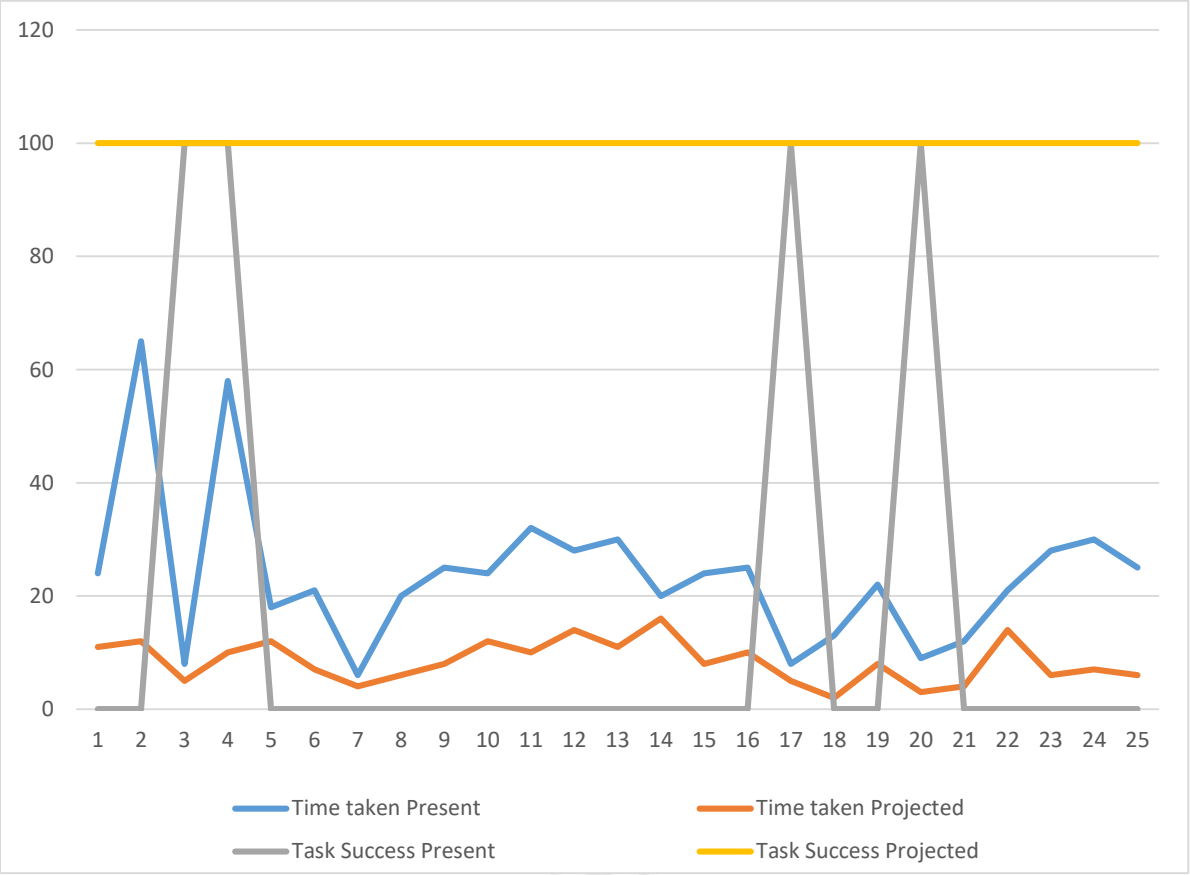


Fig 5.47 Graph of Imapct Differential

5.6.2.5 Result

From the user validation test, it is found that the mean time taken by the user(s) to spell out the feedback, from the moment of their exposure to the existing media (message) on screen is 23.84

seconds, while the mean time taken by the user(s) to spell out the feedback, from the moment of their exposure to the projected alternative media tool (message) on screen is 8.44 seconds. Therefore, a reduction of 283% time is recorded for the projected media tools compared to the existing ones.

Furthermore, the mean rate of success in comprehending the meaning of the existing media tools is found to be 16% while the mean rate of success in comprehending the meaning of the projected media tools is found to be 100%. Therefore, an increase of 625% success rate is recorded for the projected media tools compared to the existing ones.

Statistically, with the P value less than 0.0001, the differences in comprehension levels of existing and projected media tools are extremely significant both in terms of task success and time taken.

These differences in reduction of time and increase of success rate lead us to define *Impact Differential*, which is the margin of measurable before/after difference between the existing and the alternative message designs in terms of selective exposure in the same scenario among the same demographic group.

5.7 Findings and Recommendations

The research work establishes the following key findings and recommendations, which may be identified together as a Framework for Mass Communication Design for communities such as the Assam tea plantation workers.

1. The field survey findings stated in Chapter 4.5 and the user validation test in Chapter 5.6.2 indicate that applying a single-tool-fits-all template does not make the media campaigns effective for the Assam tea plantation workers, and mass communication efforts towards such marginalised communities necessitate custom design interventions.
2. Before designing and disseminating a mass media tool, the following 4 steps are essential (as shown in the model flow in Table 5.3):
    a) Identifying intended users
    b) Identifying the common variables of user context
    c) Identifying the points of interaction between the media tool and the intended users

d) Identifying message design elements

3. The design strategy has to include studying the multi-ethnic tea tribe culture to understand their patterns, preferences, and socio-cultural conditioning, in which the media tools are to be used. Otherwise, they may largely resist messages or incoming information that conflict with their prevailing paradigms. The user validation test in Chapter 5.6.2 reveals this in practice, with identical patterns regardless of the media users' gender, age, and educational background.

4. The same message is to be presented in 3 modalities of visual, audio and video concurrently (as shown in Fig. 5.26) to produce an optimum level of the desired communication effect on the target users of the message, and also to enhance accessibility for individuals with vision or hearing impairments, such as older adults in the tea tribe community.

A. Visual

i. A single locally identifiable image can compactly carry a message to motivate the target users of a visual media tool.

ii. Visual components of the media tool to be minimized to only what is necessary to generate significance, usefulness, and the necessary emotional resonance for the intended users.

iii. No text. Many of the tea plantation workers have limited language skills, including those with less or no education. This requires recognizing visual comprehension as a form of literacy, irrespective of one's ability to read or write. The field survey findings stated in Chapter 4.5 also indicate that most of the subjects under study found themselves attracted to images on the posters/banners rather than text.

iv. The human figures in the visual media tool should relate to the appearance or structure of real figure in context, as shown in Fig 5.24.

v. The setup or background of the visual media tool should represent the target users' social-cultural and familiar experiences.

vi. Message designers and media users should share a common minimum visual vocabulary. Many in the tea workers' community will perceive the arrow sign as an object to be launched from bows.

vii. The visual media tool should be highly visible to seize the fleeting attention of the passersby in cluttered environments like the tea estate market areas.

viii. Contextual colour palette to be used, as shown in Fig. 5.24 in contrast to Table 5.1. Red, for instance, may not stop or scare the tea plantation worker community, rather is auspicious, culturally. Red may not also be distinct to those with colour blindness, a condition many of them suffer from.

ix. Such visual media tools are to be accessible, to be recognized from a distance, under various viewing conditions such as brief exposure, low light, or glare.

B. Audio

i. As a reinforcement of the message carried by the visual media tool, and as a pre-run to the next phase video, an audio track is to be designed and disseminated.

ii. The language should align with the community's vernacular.

iii. The narration is to be informal and conversational, mirroring the way the target audience communicates, as in the media tool in Chapter 5.4.3.

iv. The vocabulary and syntax to match approximately the community capacity.

v. The message is to be concise and precise, specifying the threat if any, providing clear instructions on preventive measures, and indicating the consequences of non-compliance. The primary goal is to motivate action rather than merely informing about it and letting people still suffer. Viewing, listening or reading a message does not guarantee comprehension or motivation, as revealed in the user validation test in Chapter 5.6.2, in which the study subjects were often found to misinterpret or inaccurately interpret the existing messages, which indicates that the information conveyed by the messages did not align with the user's capacity or the message wordings were too dense or difficult to understand. The alternative narration (media tool in Chapter 5.4.3) instead

focuses only on basic essential points, gradually revealing information, thereby reducing the cognitive load on users and helping them understand the message more easily.

vi. The dissemination is to be repetitive, at the tea estate level or local administration level.

C. Video

i. As the final reinforcement of the message, already carried through visual and audio media tools, a video media tool is to be disseminated.

ii. Moving images to be accompanied by the same audio track that was disseminated earlier. This will aid in lessening the media user's burden of information load.

iii. The visuals should present characters, situations and settings that are relatable and therefore more credible to the intended users of the media tool. As established in the field survey findings in Chapter 4.5, a sizeable portion of those who watched public awareness announcements on television did not understand them much, and the user validation test in Chapter 5.6.2 shows that the incomprehensible videos had unfamiliar characters, situations and settings.

iv. The visual language and the treatment of the video message need to reflect the community context, such as, but not limited to, costume, body complexion, facial expressions, body orientation, house, open areas, community places, and others. The findings of the field survey in Chapter 4.5 suggest that familiarity with the community context has helped the users of the media tools understand the messages.

v. Colour properties are to be adjusted to match the community environment.

vi. To avoid confusion among the media tool users in the community, largely uninitiated to such intervention, flashing or blinking faster than twice per second is to be avoided.

vii. Auto-scrolling graphics and animated effects are to be avoided as they could be challenging to perceive for many in the community.

5. The mass communication design needs to utilise the experiential knowledge of the intended media users as if they are physically present within the design, as shown in the media tool in Chapter 5.4.4. Tea plantation workers interact with only a limited portion of their physical and social surroundings in their daily lives. They work in the same setting, travel the same routes, visit the same markets. As a result, their understanding of social reality is heavily influenced by mediated experiences - what they see, hear, and read. These experiences need to be insights for the message designer to fit the media user's mental framework.

6. As established in the user validation test in Chapter 5.6.2, despite the information being identical in both existing and projected scenarios, there is a significant difference in the viewers' acceptance of the messages. The projected messages enable users to understand the campaign theme and the desired action successfully and more quickly. This leads to the finding that the more the message designer recognizes the contextual elements influencing the interaction between the message and its users, the more the message designer's intent and the user's comprehension reach closeness. To reflect this, an equation is defined as follows:

   Alignment between the message designer's intent and the user's comprehension $\propto$ *(is proportional to) alignment of message design with the user context.*

7. The measurement of the ground impact of one media tool over another can be calculated as visualised in Fig 5.47. For this purpose, an indicator *Impact Differential* is proposed and defined as follows:

   Impact Differential = The margin of measurable before/after difference measured as reduction of time and increase of success rate in comprehending an intended message between the existing and the alternative message designs in terms of selective exposure at the same scenario among the same demographic group.

5.7.1 Validation by the Producers

The recommendations in the framework were subjected to validation by the producers/ persons, representing both the government sector and private agencies, responsible for designing/ disseminating mass media tools as part of various public awarenss campaigns.

5.7.1.1 Participant Profile

1. Santanu Rowmuria, Indian Information Service; News Editor, Doordarshan, Guwahati
2. Chidananda Saikia, Directorate of Information and Public Relations (DIPR), Government of Assam
3. Rontu Chetia, Final Destinations Films
4. Nilim Jyoti Dutta, Adee Enterprise (media production agency)

Table 5.9 Producers' validation protocol

Step	Description
I	Producers/ persons responsible for designing/ disseminating mass media tools as part of public campaigns have been invited to participate in the validation.
II	The participants include 2 from government and 2 from private agencies.
III	Consent for participation in this validation has been taken over the phone.
IV	A feedback form is designed with reprentative recommendations from the research work.
V	The feedback form is emailed to the participants.
VI	Physical interview is evaded to avoid any acquiescence bias.
VII	The participants were asked to rate their agreement level on the recommendations.
VIII	A 5-point Likert scale was used for the evaluation of the feedback.
IX	The responses are tabulated based on the responses and a one-sample t-test is performed on the data.

5.7.1.2 Data tabulation

Data codes on the Likert scale:

1 Strongly disagree
2 Somewhat disagree
3 Neither agree nor disagree
4 Somewhat agree
5 Strongly agree

Table 5.10 Data of validation from the producers

Recommendation	Participant 1	Participant 2	Participant 3	Participant 4	Row Mean
1	5	5	4	5	4.75
2	5	4	2	1	3
3	5	5	5	1	4
4	4	4	4	5	4.25
5	4	2	3	4	3.25
6	3	4	5	4	4
7	5	5	5	4	4.75
8	5	5	4	2	4
9	5	4	5	1	3.75
10	5	5	3	5	4.5
11	4	5	2	2	3.25
12	5	5	5	5	5
13	4	4	5	5	4.5
14	5	5	4	5	4.75
15	5	5	2	5	4.25
16	5	5	5	4	4.75
17	4	4	5	4	4.25
18	4	5	4	5	4.75
19	3	2	4	5	3.5
20	3	2	5	5	3.75
21	4	5	4	4	4.25

5.7.1.3 Testing of Participant Data

T-test

P value and statistical significance:

The two-tailed P value is less than 0.0001

By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence interval:

The hypothetical mean is 3.0000

The actual mean is 4.1548

The difference between these two values is 1.1548

The 95% confidence interval of this difference:

From 0.8941 to 1.4154

Intermediate values used in calculations:

t = 9.2402

df = 20

standard error of difference = 0.125

Mean = 4.1548

SD = 0.5727

SEM = 0.1250

N = 21

5.7.1.4 Result

The t-test was performed against a hypothetical mean value 3 denoting that the respondent neither agrees nor disagrees with the recommendation.

It is seen that none of the mean values is less than 3. On a scale of 1 to 5, the overall mean is 4.1548, which indicates positive acceptance by the media producers/ persons responsible for designing/ disseminating mass media tools as part of public campaigns.

5.8 Research Contribution

- The discourse on *mass communication design* is novel since no communication studies or communication design studies have included it by far.

- Validated by significantly higher effectiveness ratings for alternative message designs, this research provides a Framework for Mass Communication Design with 7 key findings, including 22 recommendations for visual, audio and video media tools, for communities such as the Assam tea plantation workers.

- Distinct from the usual measurements of media reach or access, e.g., newspaper circulation data, television rating point, web views, this research presents an empirical evidence-based measurement of the ground impact of one media tool over another, for which an indicator viz. *Impact Differential* is introduced, which is a novel concept in the study of mass communication.

- This research provides guidelines for mass communication researchers, media practitioners, public campaign strategists and policymakers in designing messages for mass campaigns among marginalized communities including plantation workers, ensuring optimal message effectiveness.

5.9 Limitations of this Research

The research work went through almost a couple of years in COVID-19 pandemic and its aftereffects. Accessing the tea plantation workers' worksites and residential areas was a challenge, and therefore the field studies were done with limited time and faster speed to meet the restrictions. Furthermore, the field survey and the user validation tests were conducted in the Brahmaputra valley of Assam only for similar characteristics of the plantation worker community.

5.10 Future Scope of Study

The understanding generated through this research work may act as a step towards developing future models focussing on mass communication mediated by design interventions with adequate flexibility for context-based adaptation. The research work can be tested for replication among other tea-producing regions as well as other plantation workers elsewhere.

References

Achinto, R. (2013). An institution-based insight into India's tea industry, *Academy of Taiwan Business Management Review*, *9*(3), 20–24.

Adoni, H. (1979). The functions of mass media in the political socialization of adolescents. *Communication research*, *6*(1), 84-106.

Aitchison, J. (1994). Bad birds and better birds: Prototype theories. In *Language*. Macmillan Education UK. pp. 445-457.

Amrith, S. S. (2008). Food and welfare in India, c. 1900-1950, *Comparative Studies in Society and History*, *50*(4), 1017.

Anderson, C. W., Bell, E., & Shirky, C. (2015). Post-industrial journalism: Adapting to the present. *Geopolitics, History and International Relations*, *7*(2), 32.

Antrobus, H. A. (1957). A History of the Assam Company, 1830-1953. Edinburgh. p. 384.

Arndt, J. (1968). A test of the two-step flow in diffusion of a new product, *Journalism Quarterly*, *47*, 457-465.

ASER. 2009. An Evaluation of the reading enhancement programme in primary schools under tea garden management. Guwahati: ASER Institute (NE).

Assam Human Development Report (2014). OKDISCD and Government of Assam.

Atkin, C. K. (2001). Theory and principles of media health campaigns. In R. E. Rice & C. K. Atkin (Eds.), *Public Communication Campaigns*, 3, 49-68. CA: Sage.

Babrow, A. S. & Swanson, D. L. (1988). Disentangling antecedents of audience exposure levels: Extending expectancy-value analyses of gratifications sought from television news. *Communication Monographs*, *55*, 1-21.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. *Englewood Cliffs*, NJ: Prentice-Hall, Inc.

Banning, S. A. (2007). Factors affecting the marketing of a public safety message: the third-person effect and uses and gratifications theory in public reaction to a crime reduction program. *Atlantic Journal of Communication*, *15*(1), 1-18.

Barlow, T. and Wogalter, M. S. (1993) Alcoholic beverage warnings in magazine and television advertisements. *Journal of Consumer Research*, *20*, 147-156.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Barpujari, H. K. (1980). Assam in the days of the Company (1826-42) Guwahati: Spectrum.

Barpujari, H. K. (2007). The Comprehensive History of Assam, Vol. V, Guwahati: Assam Publication Board. p. 48.

Bartsch, A., Mangold, R., Viehoff, R., & Vorderer P. (2006). Emotional gratifications during media use an integrative approach. *Communications*, *31*, 261-278.

Batagoda, M. (2018). Understanding color psychology through culture, symbolism, and emotion, DOI: https://uxplanet.org/understanding-color-psychology-though-culture-symbolism-and-emotion-215102347276.

Bazalgette, C. (2005). Media literacy for all? In Implementing media literacy: Empowerment, participation and responsibility. London: Westminster Media Forum Seminar Series.

Bechtel, R. B., Achelpohl, C., & Akers, R. (1972). Questionnaire responses on television viewing. *Television and Social Behavior: Television in day-to-day life: patterns of use, 72*(9057), 274.

Behal, R. P. (1985). Forms of labour protest in Assam valley tea plantations, 1900-1930. *Economic and Political Weekly*, *20*(4),19-26.

Behal, R. P. (2006). Power structure, discipline, and labour in Assam tea plantations under colonial rule. *International Review of Social History, 51*(S14), 143-172.

Behal, R. P. (2010). Coolie drivers or benevolent paternalists? British tea planters in Assam and the indenture labour system, *Modern Asian Studies*, *44* (1), 39.

Behal, R. P. (2014). One hundred years of servitude: Political economy of tea plantations in colonial Assam, New Delhi: Tulika Books. p. 85.

Behal, R. P., & Mohapatra, P. P. (1992). 'Tea and money versus human life: The rise and fall of the indenture system in the Assam tea plantations, 1840–1908. *The Journal of Peasant Studies*, *19*(3-4), 142-172.

Bem, D. J. (1970). Beliefs, attitudes, and human affairs. Belmont, CA: Brooks.

Beniger, J. R. (1990). Who are the most important theorists of communication? *Communication Research*, *17*(5), 698-715.

Benkler, Y (2006). The Wealth of networks: How social production transforms markets and freedom. *New Haven*, CT: Yale University Press.

Berrigan, F. J. (1977). Access: Some western models of community media. Paris: UNESCO.

Bertin, J. (1983). Semiology of graphics. Madison, WI: The University of Wisconsin Press.

Bettinghaus, E. P. (1986). Health promotion and the knowledge-attitude-behavior continuum. *Preventive Medicine*, *15*, 475-491.

Bhadra, M. (1985). Women workers in tea plantations, *Indian anthropologist*, *15* (2). 95.

Bhadra, R. K. (1990). Some features of tea plantations and surplus labourers in Assam. In: Karotemprell & B. Dutta Roy (Eds.), Tea Garden Labourers of North East India. Shillong: Vendrame Institute. pp. 200-13.

Bhattacharya, N. (2012). Contagion and enclaves: tropical medicine in colonial India. Liverpool University Press.

Bhattacharyya, N. and Chakrabarti, D. (2009). Design development scope on women occupational aspect: Specific ref. to different activities in the tea industry, *Proceedings Indian Science Congress*, Section XI.

Bhattacharyya, N. and Chakrabarti, D. (2012). Ergonomic basket design to reduce cumulative trauma disorders in tea leaf plucking operation work, *41* (1). 1234-1238.

Bhowmik, S. K. (2002). Productivity and labour standards in the tea plantation sector in India. In: A. Sivananthiran and C.S. Venkata Raman (Eds.), Labour and Social Issues in Plantations in South Asia: Role of Social Dialogue. New Delhi: International Labour Organisation. pp.133-166.

Bhowmik, S. K. (2011). Ethnicity and isolation: marginalization of tea plantation workers. *Race/Ethnicity: Multidisciplinary Global Contexts*, *4*(2), 235–253.

Bhowmik, S., Xaxa, V., & Kalam, M. A. (1996). *Tea plantation labour in India*. Friedrich Ebert Stiftung. p. 4.

Nath, B. (2016). Tea plantation workers of Assam and the Indian national movement, 1921-1947. New Delhi: Primus Books. p. 13.

Birren, F. (1969). Light, color and environment. New York: Van Nostrand Reinhold Co.

Blake, R. H. & Haroldsen, E. O. (1975): A taxonomy of concepts in communication. NY: Hasting House.

Boafo, S. T. K. (2002). Participatory development communication: an African perspective. In: G. Bessette (ed.), People, land and water: Participatory development communication for natural resource management. Ottawa, Canada: IDRC. 41-50.

Bohle, R. H., & Garcia, M. R. (1986). Reader reactions to color in newspapers. Conference of the association for education in journalism and mass communications, Norman, Oklahoma.

Bolton, D. (2019). Tea consumption second only to packaged water, World Tea News. Retrieved on 24 July 2020 from https://worldteanews.com/tea-industry-news-and-features/tea-consumption-second-only-to-packaged-water.

Bora, P.J., Das, B.R., Das, N. (2018): Availability and utilization of sanitation facilities amongst the tea garden population of Jorhat district, Assam, *Int. Journal of Community Medicine and Public Health*, 5, 2506-2511.

Bordoloi, N.C. (1976). History of mental hospital. Centenary Souvenir of Tezpur Mental Health Hospital.

Borgohain, H. (2015): Assamar sah udyogar akathita kahini, 2. Guwahati: Students Stores.

Boruah, P. (2006). The tea industry of Assam: Origin and development. Guwahati: EBH Publishers.

Bracht, N. (2001). Community partnership strategies in health campaigns. In: R. E. Rice & C. K. Atkin (Eds.), Public Communication Campaigns, *3*, 323-342. Thousand Oaks, CA: Sage.

Breman, J. (1989). Taming the coolie beast: Plantation society and the colonial order in southeast Asia. Delhi. p.157.

Bresnahan, T. F. and Bryk, J. (1975) The hazard association values of accident prevention signs. *Professional Safety*, 17-25.

British Parliamentary Papers (1837). LII No. 180.

Broadbent, D. (1977). The hidden pre-attentive processes. *American Psychologist*, *32*(2), 109-118.

Broadbent, G. (1973). Design in architecture: Architecture and the human sciences. London: John Wiley & Sons.

Brunsdon, C., and Morley, D. (1978). Everyday Television. London: BFI.

Buckingham, D., Fraser, P., & Sefton-Green, J. (2000). Making the grade: Evaluating student production in media studies. In J. Sefton-Green & R. Sinker (Eds.), Evaluating creativity, p. 129, London: Routledge.

Budd, R.W., Ruben, B.D. (1988). Beyond media: new approaches to mass communication. 2nd edn. New Brunswick: Transaction Books.

Burke, R. R. (1997). Do you see what I see? The future of virtual shopping. *Journal of the Academy of Marketing Science*, *25*(4), 352-360.

Butsch, R. (2017). Media Sociology- a reappraisal, S. Waisbord (ed.). Guwahati: Rawat Publications. p. 92.

Campbell, G. (1866). The ethnology of India. *Journal of the Asiatic Society of Bengal*, Supplementary Number, *30*(2).

Carey, J. (1988). Communication as culture: Essays on media and society. New York: Routledge.

Carlston, D. E., & Smith, E. R. (1996). Principles of mental representation. In E. T. Higgins & A. W. Kruglanski (Eds.), Social psychology: Handbook of basic principles, New York: Guilford Press. pp. 184-210.

Carpentier, N. (2007). The on-line community media database RadioSwap as a translocal tool to broaden the communicative rhizome. *Observatorio Journal*, *1*, 1-26.

Carveth, R., & Alexander, A. (1985). Soap opera viewing motivations and the cultivation process. *Journal of Broadcasting & Electronic Media*, *29*, 259-273.

Castells, M. (2009). Communication power. Oxford: Oxford University Press

Chaiken, S., Liberman, A., Eagly, A. H. (1989). Heuristic and systematic processing within and beyond the persuasion context. In: J. S. Uleman & J. A. Bargh (Eds.), Unintended Thought. New York: Guilford Press. pp. 212-252.

Chakravarty, S. (2014). Children employed in the tea plantations of Assam, Proceedings of the Indian History Congress, vol. *75*.

Chakravorty, R. (1997). Socio-economic development of plantations workers in north east India. Dibrugarh: N.L. Publishers.

Chapanis, A. (1994). Hazards associated with three signal words and four colours on warning signs. *Ergonomics*, *37*, 265-275.

Chatterjee, P. (2001). Encounters over tea: labor, gender, and politics of an Indian plantation, pp. 112-191.

Chatterjee, S. & Das Gupta, R. (1981). Tea Labour in Assam Recruitment and Government Policy, 1840-80. *Economic and Political Weekly, 16*(44/46), 1861-1868.

Cheskin, L. (1954). Color guide for marketing media. NY: The MacMillan Company.

Cho, J., Shah, D. V., McLeod, J. M., McLeod, D. M., Scholl, R. M., & Gotlieb, M. R. (2009). Campaigns, reflection, and deliberation: Advancing an OSROR model of communication effects. *Communication theory*, *19*(1), 66-88.

Coates, D. (2003). Watches tell more than time: Product design, information and the quest for elegance. London: McGraw-Hill.

Collins, B. L. (1983). Evaluation of mine-safety symbols. In: Proceedings of the Human Factors Society, 27th Annual Meeting, pp. 947-949. Santa Monica, CA: Human Factors Society.

Conrad, R (1962). The design of information. *Occupational Psychology*.

Craig, G. (2007). Community capacity-building: Something old, something new? *Critical Social Polity*, *27*(3), 335-359.

Crilly, N., Good, D., Matravers, D., & Clarkson, P. J. (2008). Design as communication: Exploring the validity and utility of relating intention to interpretation. *Design Studies*, *29*(5), 425-457.

Crilly, N., Moultrie, J., & Clarkson, P. J. (2004). Seeing things: Consumer response to the visual domain in product design. *Design Studies*, *25*(6), 547-577.

Crosby, A.W. (1972). The Columbian exchange: Biological and cultural consequences of 1492. Connecticut: Greenwood Press.

Curtin, M. (2004). Media capitals: Cultural geographies of global TV. In: L. Spigel & J. Olsson (Eds.), Television After TV: Essays on a Medium in Transition, pp. 270-302. Durham, NC: Duke University Press.

Danes J.E., Hunter J. E. & Woelfel, J. (1978). Mass communication and belief change: a test of three mathematical models, *Human Communication Research*, *4*(3), 243-252.

Das, K. (2012). Valuing life in a regulated labour market: A study on tea plantations in Assam, India. NLI Research Studies Series No.: 095, 2012. V.V. Giri National Labour Institute.

Das, R. K. (1931). Plantation labour in India, Calcutta: R. Chatterjee. p. 20.

De Fleur, M. L. and Ball-Rokeach, S. J. (1982). Theories of mass communication, 4th ed., NY: Longman Inc.

de Souza, C. S. (1993). The semiotic engineering of user interface languages. *International Journal of Man-Machine Studies*, *39*(5), 753-773.

DeRenzy, A. C. C. (1879). Annual sanitary report of the province of Assam for the year 1878. Shillong: Assam Secretariat Press, pp. 7-15.

DeRenzy, A. C. C. (1880). Annual sanitary report of the province of Assam for the year 1879. Shillong: Assam Secretariat Press. pp. 22- 34.

DeRenzy, A. C. C. (1891). Cholera among the Assam tea coolies. *The Lancet*. *137*(3528), 823.

Dervin, B., & Frenette, M. (2001). Applying sense-making methodology: Communicating communicatively with audiences as listeners, learners, teachers, confidantes. In R. E. Rice & C. K. Atkin (Eds.), *Public communication campaigns*, *3*, 69-87. Thousand Oaks, CA: Sage.

Desmet, P. M. A., & Hekkert, P. (2007). Framework of product experience. *International Journal of Design*, *1*(1), 57-66.

Devi, P. (2014). Socio economic status of the tea garden women workers in Assam - A case study with special reference to Sonitpur district, *2*(2), 1-7.

Dewar, R. E., Kline, D. W., Schieber, F. and Swanson, H. A. (1994). Symbol signing design for older drivers, final technical report. Washington, DC: Federal Highway Administration.

Dibrugarh University, Centre for Women's Studies (2017). Stories behind a hot cup of assam tea. Report submitted to ministry of women and child development, Government of India.

Dimmick, J. W., McCain, T. A., & Bolton, W. T. (1979). Media use and the life span. *American Behavioral Scientist*, *23*(1), 7-31.

Dobson, M. W. (1979). Visual information processing during cartographic communication. *The Cartographic Journal*, *16*, 14-20.

Dominick, J. (2006). Dynamics of mass communication: Media in the digital age. Mcgraw-Hill Book Company.

Doob L. W. (1935). *Propaganda: Its psychology and technique*. Henry Holt & Co.

Doob, A., & Macdonald, G. (1979). Television viewing and fear of victimisation: Is the relationship causal? *Journal of Personality and Social Psychology*, *37*, 170-179.

Dowding, C. (1894). Tea-Garden Coolies in Assam - A Letter by J. Buckingham, C.I.E., Calcutta: Thacker, Spink & Co, p. 31.

Driskill, L. (1996). Collaborating across national and cultural borders. In D. C. Andrews (Ed.), International Dimensions of Technical Communication. Alexandria, VA: Society for Technical Communication. pp. 23-44.

Duara, M. & Mallick, S. (2012): Tea industry in Assam (India): Issues of migration and gender discrimination, Proceedings of International Conference on History and Society Development. pp. 174-177. DOI: 10.7763/IPEDR.2012.V54.35

Ebbinghaus, H. (1902). Grundzuge der Psychologie. Leipzig: Viet. p. 123.

Eveland, W. P., Jr., Shah, D. V., & Kwak, N. (2003). Assessing causality in the cognitive mediation model: A panel study of motivations, information processing and learning during campaign 2000. *Communication Research*, *30*, 359-386.

Farrar, K., & Krcmar, M. (2006). Measuring state and the trait aggression. A short, cautionary tale. *Media Psychology*, *8*, 127-138.

Fernandes, W., Sanjay, B. & Bharali, G. (Eds.) (2003). Primary education of plantation labourers' children in Assam. Guwahati: North East Resource Centre.

Festinger, L. (1957). A theory of cognitive dissonance. Evanstone, IL: Row, Peterson

Finn, S., & Gorr, M. B. (1988). Social isolation and social support as correlates of viewing motivations. *Communication Research*, *15*, 135-158.

Fisch, S. M. (2000). A capacity model of children's comprehension of educational content on television. *Media Psychology*, *2*(1), 63-91.

Fiske, J. (2010). Introduction to communication studies. Routledge.

Flanagin, A., & Metzger, M. (2007): Internet use in contemporary media environment. *Human Communication Research*, *27*(1), 153-181.

Forslund, K., Dagman, A., & Söderberg, R. (May, 2006). Visual sensitivity: Communicating poor quality. International Design Conference, Dubrovnik, Croatia

Freire, P. (1970). Pedagogy of the oppressed. NY: Continuum.

Friedland, L. A., Shah, D., Lee, N., Rademacher, M. A., Atkinson, L., & Hove, T. (2007). Capital, consumption, communication, and citizenship: The social positioning of taste and civic culture in the US.

Frieling, H. (1957). Psychologische raumgestaltung und farhdynamik (Psychological room design and color dynamic). Gottingen: Musterschmidt Verlag.

Fujioka, Y. (1999). Television portrayals and African-American stereotypes: Examination of television effects when direct contact is lacking. *Journalism & Mass Communication Quarterly, 76*, 52-75.

Gait, Edward. (1902). A *History of Assam.* Guwahati: EBH Publishers.

Gajanayake, H. (2019). Design inspiration. *Muzli*. Accessed on 20 February 2023 from https://medium.muz.li/archive/2019/03/31.

Galloway, J. J., & Meek, F. L. (1981). Audience uses and gratifications: An expectancy model No Communication Research, *8*, 435-449. Park, CA: Sage.

Galustyan, O. V., Papchenko, E. V. (2015). Understanding colour in the human culture with special emphasis on the Indian subcontinent. *Chitrolekha International Magazine on Art and Design*, *5*(1).

Gangulee, N. (1939). Health and nutrition in India, London: Faber and Faber Ltd., pp. 229-230.

Garramone, G. M. (1984). Audience motivation effect: More evidence. *Communication Research*, *11*, 79-96.

Gerbner, G. (1969). Toward cultural indicators: The analysis of mass-mediated message systems. *AV Communication Review*, *17*, 137-148.

Getto, G. & St.Amant, K. (2014). Designing globally, working locally: Using personas to develop online communication products for international users. *Communication Design Quarterly, 3*(1), 24-46.

Gillette, D. (1999). Web design for international audiences. *Intercom,* 15-17.

Gitlin, T. (1978). Media sociology: The dominant paradigm. *Theory and Society, 6*(2), 205-253.

GNRTFN (2016): A life without dignity - the price of your cup of tea: Abuses and violations of human rights in tea plantations in India, Heidelberg: Global Network for the Right to Food and Nutrition.

Goduka S., Das A. K. (2021): Design-audited mass communication model. In: Chakrabarti A., Poovaiah R., Bokil P., Kant V. (Eds.), Design for Tomorrow, Volume 2. Smart Innovation, Systems and Technologies, vol. 222. Singapore: Springer.

Goduka, S., Das, A. K. (2023). Awareness Campaign Design for Assam Tea Plantation Workers. In: Chakrabarti, A., Singh, V. (Eds.), Design in the Era of Industry 4.0, Volume 3. ICORD 2023. Smart Innovation, Systems and Technologies, vol. 346. Singapore: Springer.

Goduka, S., Das, A. K. (2024). Communication Concepts and Models: Exploring Relevance for Community Development. *Educational Administration: Theory and Practice*, *30*(4), 7243–7259.

Gokhale, N. A. (1998). The hot brew: The Assam tea industry's most turbulent decade, 1987-1997. Spectrum Publications. p. 4

Goswami, P. (2012). The History of Assam: From Yandabo to partition, 1826-1947, New Delhi: Orient Blackswan. p. 166.

Graber, D. (1988). Processing the news: How people tame the information tide, 2nd ed. NY: Longman.

Greenwald, A. G. (1968). Cognitive learning, cognitive response to persuasion, and attitude change. In: A. Greenwald, T. Brock, & T. Ostrom (Eds.), Psychological Foundations of Attitudes. NY: Academic Press.

Gregory, M., and Poulton, E. C. (1970). Even versus uneven right-hand margins and the rate of comprehension in reading. *Ergonomics in Design, 4*. 427-434.

Griffiths, P. (1967). The history of the Indian tea industry. London: Weidenfeld and Nicolson. pp. 203-204.

Grube, J.W. (2004). Alcohol portrayals and alcohol advertising on television: Content and effects on children and adolescents. *Alcohol Health & Research World*, *17*(1), 54-60.

Guha, A (1977): Planters raj to swaraj: Freedom struggle and electoral politics in Assam, 1826-1947. Indian Council of Historical Research.

Gunter, B. (1985). Determinants of television viewing preferences. In: J. Bryant & D. Zillmann (Eds.), Selective Exposure to Communication. Hillsdale, N.J.: Lawrence Erlbaum Associates, Inc. pp. 93-112.

Gupta, B. (2001). History of Cachar tea industry - as I know. Souvenir of Surma Valley Branch Indian Tea Association.

Gupta, R. D. (1981). Structure of the labour market in colonial India. *Economic and Political Weekly*, 1781-1806.

Hall, S. (1980). Encoding/decoding. In: Hall, S., Hobson, D., Lowe, A. & Willis, P. (Eds.), Culture, Media, Language. London: Unwin Hyman, pp. 107-117.

Hall, S. (1997). Representation, cultural representations and signifying practices, London: Sage

Hall, S., and Jefferson, T. (1976). Resistance through rituals: youth subcultures in post-war Britain. Hutchinson.

Hamilton, N. F., Rubin, A. M. (1992). The influence of religiosity on television use. *Journalism Quarterly, 69*, 667-678.

Hardin, C. D., & Higgins, E. T. (1996). Shared reality: How social verification makes the subjective objective. In: R. M. Sorrentino & E. T. Higgins (Eds.), Handbook of motivation and cognition, *3*, 28-84. NY: Guilford Press.

Haridakis, P. M., & Rubin, A. M. (2005). Third-person effects in the aftermath of terrorism. *Mass Communication & Society, 8*(1), 39-59.

Harlalka S. S. (1975). Tea Garden workers of Assam. People's Publishing House, Dhubri.

Harrison, M. (1992), Tropical medicine in nineteenth century, *The British Journal for the History of Science*, *25*(3). 301.

Hawkins, R. P., & Pingree, S. (1986). Activity in the effects of television on children. In: J. Bryant & D. Zillmann (Eds.), Perspectives on media effects. pp. 233-250. Hillsdale, NJ: Erlbaum.

Hawkins, R., & Pingree, S. (1990). Divergent psychological processes in constructing social reality from mass media content. In: N. Signorielli & M. Morgan (Eds.), Cultivation analysis: New directions in media effects research. pp. 35-50. Newbury Park, CA: Sage.

Hazarika, K. (2012): Tea Tribes are lagging behind in the process of urbanization**:** a study on selected tea gardens of Jorhat district, Assam, Int. *Journal of Trends in Economics Management and Technology*, *1*(6).

Hazarika, N. C., Biswas, D., Narain, K., Kalita, H. C., Mahanta, J. (2002). Hypertension and its risk factors in tea garden workers of Assam, *Natl Med J India, 15*(2).

Hawksley, H. (2015). Marooned in an overgrown tea garden, BBC News.

Hebdige, D. (1979). Subculture: the Meaning of Style. London and New York: Methuen.

Higgins, E. T., & King, G. (1981). Accesibility of social constructs: Information processing consequemces of individual and contextual variability. In: N. Cantor & J. F. Kihlstrom (Eds.), Personality, cognition and social interaction, pp. 69-121. Hillsdale, NJ: Erlbaum.

Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology*, *13*, 141-154.

Higgins, J. W. (1999). Community TV and the vision of media literacy, social action and empowerment. *Journal of Broadcasting and Electronic Media, 43*(4), 625–644.

Hirsch, P. (1980). The scary world of the non-viewer and other anomalies: A reanalysis of Gerbner et al.'s findings on cultivation analysis. *Communication Research, 7*, 403-456.

Hoffman, D. L., Novak, T. P. (1998). A new marketing paradigm for electronic commerce, *The Information Society*, *4*, 6-7.

Holmes, D. (2005). Communication theory: media, technology and society, 1st ed., Sage, Thousand Oaks.

Horton, W. (1993). The almost universal language: Graphics for international documents. *Technical Communication, 40*, 682–93.

Hovland, C., Janis, I., & Kelley, H. (1953). Communication and persuasion. *New Haven*. CT: Yale University Press.

Howley, K. (2010). Understanding Community Media, Sage. https://doi.org/10.1177/001946469002700304

Huckfeldt, R., & Sprague, J. (1995). Citizens, politics, and social communication: Information and influence in an election campaign. NY: Cambridge University Press.

Hughes, M. (1980). The fruits of cultivation analysis: A re-examination of some effects of television watching. *Public Opinion Research*, *2*, 1-15.

Hunter, W. W. (1879). *A statistical account of Assam*, vol. 2. Trubner & Company.

Hyman, H. H., & Sheatsley, P. B. (1947). Some reasons why information campaigns fail. *Public Opinion Quarterly*, *11*, 412–423

Imperial Gazetteer Bengal, Chota Nagpur Division (1907). Calcutta: The Bengal Secretariat Press.

Imperial Gazetteer of India (1908), Oxford: Clarendon Press.

Inter-Governmental Group on Tea (2020). Current market situation and medium-term outlook.

James, N. C., & McCain, T. A. (1982). Television games preschool children play: Patterns, themes and uses. *Journal of Broadcasting & Electronic Media*, *26*(4), 783-800.

Jha, J. C. (1996). Aspects of indenture inland emigration to north-east-India 1859-1918, New Delhi: Indus Publishing Company. p.22.

Johnson-Laird, P. N. (1989). Mental models. In: M. I. Posner (Ed.), Foundations of Cognitive Science, pp. 469-499. Cambridge, MA: MIT Press.

Jones, Q., Ravid, G., & Rafaeli, S. (2004). Information overload and the message dynamics of online interaction spaces: A theoretical model and empirical investigation, *Information Systems Research*. *15*(2), 194-210.

Joseph, M. (2009). Women workers in tea plantation: A brief appraisal. In: Sengupta, S. (Ed.), The Tea Labourers of North East India: An Anthropo-Historical Perspective, New Delhi: Mittal Publications. pp. 295.

Josephson, W. L. (1987). Television violence and children's aggression: Testing the priming, social script, and disinhibition predictions. *Journal of Personality and Social Psychology*, *53*(5), 882.

Kakati, V. (2016). Design intervention for mechanisation of tea leaf harvesting to improve productivity and efficiency (Doctoral dissertation, Indian Institute of Technology Guwahati).

Kalsher, M.J., Wogalter, M.S., Brewster, B., & Spunar, M.E. (1995). Hazard level perceptions of current and proposed warning sign and label panels. In: Proceedings of the Human Factors and Ergonomics Society, 39th Annual Meeting. Santa Monica, CA: Human Factors and Ergonomics Society. pp. 351-355.

Kaniampady, E. (2003). *Status of Women Working in the Tea Plantations: A Case Study*. Akansha Publishing House.

Kar, R. K. (1993). Socio-economic life of tea and ex-tea labour of Assam: An appraisal. *Bulletin of Department of Anthropology*. Dibrugarh University, *20*(21), 110-120.

Kar, R. K. (2000). Ecology of health and health culture: A case study among the tea labourers in Assam, India. *International Journal of Anthropology*, *15*(1-2).

Kar, R. K. (2001). Anthropo-historical appraisal of a migrant population in Assam, north-east India. In: Sectional Presidential Address, Anthropology and Archaeology Section, Indian Science Congress, 88th Session, New Delhi.

Karjalainen, T. -M. (2004). Semantic transformation in design: Communicating strategic brand identity through product design references. Helsinki, Finland: Ilmari. p. 53.

Katz, E. (1959). Mass communications research and the study of popular culture: An editorial note on a possible future for this journal. *Departmental Papers (ASC)*, 165.

Katz, E. and Lazarsfeld, P. (1955), Personal influence: The part played by people in the flow of mass communication. The Free Press.

Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *The Public Opinion Quarterly*, *37*(4), 509-523.

Keller-Cohen, D., Meader, B. and Mann, D. (1990). Redesigning a telephone bill. *Information Design Journal*. *6*(1), 45-66.

Khullar, D. R. (2006). India. A comprehensive geography. New Delhi: Kalyani Publishers.

Kinder, B. N., Pape, N. E., & Walfish, S. (1980). Drug and alcohol education programs: A review of outcome studies. *International Journal of the Addictions*, 15, 1035-1054.

Klapper, J. T. (1960). The effects of mass communication. NY: Free Press.

Klapper, J. T. (1963). Mass communication research: An old road resurveyed. *Public Opinion Quarterly*, *27*, 515-527.

Koenig, G. K. (1974). Architettura e comunicazione (Seconda edizione accresciutia da un saggio su Schindler e Neutra). Florence, Italy: Liberia Editrice Fiorentina.

Kostelnick, C. (1995). Cultural adaptation and information design: Two contrasting views. *IEEE Transactions on Professional Communication 38*: 182-96.

Kreuter, M. W., Strecher, V. J., & Glassman, B. (1999). One size does not fit all: The case for tailoring print materials. *Annals of Behavioral Medicine*, 21(4), 276-283.

Kreuter, M., Farrell, D., Olevitch, L., & Brennan, L. (2000). Tailoring health messages: Customizing communication with computer technology. Mahwah, NJ: Erlbaum.

Krippendorff, K., & Butter, R. (1984). Product semantics: Exploring the symbolic qualities of form. *Innovation: The Journal of the Industrial Designers Society of America*, 3(2), 4-9.

Krishnatray, P., Melkote, S. R., & Krishnatray, S. (2006). Providing care to persons with stigmatised illness: Implications for participatory communication. *Journal of Health Management*, 8(1), 51-63.

Krugman, H. E. (1965). The impact of television advertising: Learning without involvement. *Public Opinion Quarterly*, *29*, 349-356.

Krugman, H. E. (1988). Point of view: Limits of attention to advertising. *Journal of Advertising Research*, *28*(October/November), 47-50.

Kumar, K. R., Dashora, K., Krishnan, N., Sanyal, S., Chandra, H., Dharmaraja, S., & Kumari, V. (2021). Feasibility assessment of renewable energy resources for tea plantation and industry in India - A review. *Renewable and Sustainable Energy Reviews*, *145*, 111083.

Kurmi, S. (1991): Sah bagisar jeevan aru sanskriti, Jorhat: Asssam Sahitya Sabha.

Langmia, K. (2011). Traditional cultures and their effects on globalization: An African perspective. In: K. St.Amant & B. A. Olaniran (Eds.), Globalization and the digital divide. Amherst, NY: Cambria Press. pp. 37–58.

Lars. E. (2018). A medium-centred model of communication. *Semiotica, 3* (2), 72-87.

Lasswell, H. D. (1948). The structure and function of communication in society. *The Communication of Ideas, 37*(1).

Lazarsfeld. P, Berelson. B., and Gaudet, H. (1944). The people's choice: How the voter makes up his mind in a presidential campaign. Columbia University Press.

Lee, K. M. (2004). Presence, explicated. *Communication Theory*, *14*, 27-50.

Lerner, N.D. & Collins, B.L. (1980). The Assessment of safety symbol understandability by different testing methods. Washington, DC: National Bureau of Standards.

Lin, C. A. (2001). Audience attributes, media supplementation and likely online service adoption. *Mass Communication and Society, 4*, 19-38.

Lindlof, T. R. (1987). Natural audiences: Qualitative research of media uses and effects.

Lovlie A.S. (2016). Designing communication design. *Journal of Media Innovations, 3*(2), 72-87.

Lull, J. (1980). The social uses of television. *Human Communication Research, 6*, 197-209.

Lull, J. (1990). Inside Family Viewing (Routledge Revivals): Ethnographic Research on Television's Audiences. Comedia.

Magar, C. K., & Kar, B. K. (2016). tea plantations and socio-cultural transformation: The Case of Assam, India. *Space and Culture*, 25-38. ACCB Publishing, England.

Magliano, J. P., Dijkstra, K., & Zwann, R. A. (1996). Generating predictive inferences while viewing a movie. *Discourse Processes, 22*, 199-224.

Mahato, P. P. (1985). World-view of the Jharkhand as depicted in Songs of the Tea Garden Labourers of Assam, in *Folklore*, *26* (8).

Maletzke, G. (1963). Psychologie der massenkommunikation. Hamburg, Germany: Hans Bredow Institute.

Manyozo, L. (2007). Community media: Local is focal. *Community Develeopment Journal*, *42*(4), pp. 459-469.

Markus, H., & Zajonc, R. B. (1985). The cognitive perspective in social psychology. In: G. Lindzey & E. Aronson (Eds.), The handbook of social psychology, 3rd ed. New York. Random House. pp. 137-230.

Mastro, D., Behm-Morawitz, E., & Ortiz, M. (2007). The cultivation of social perceptions of Latinos: A mental model's approach. *Media Psychology*, *9*, 1-19.

Maund, B. (1995). Colours: Their nature and representation. Cambridge University Press.

Mayer, R. E. (2001). Multimedia learning. New York: Cambridge University Press. pp. 31-48.

McGuigan, J. (1992), Cultural Pluralism. London: Routledge.

McGuire, W. J. (2001). Input and output variables currently promising for constructing persuasive communications. In: R. E. Rice & C. K. Atkin (Eds.), Public Communication Campaigns, 3rd ed. Thousand Oaks, CA: Sage. pp. 22-48.

McGuire, W. J. (1960). A syllogistic analysis of cognitive relationships. In: M. J. Rosenberg & C. I. Hovland (Eds.), Attitude organization and change. New Haven, CT. Yale University Press. pp. 65-111.

McGuire, W. J. (1985). Attitudes and attitude change. In G. Lindzey & E. Aronson (Eds.), Handbook of Social Psychology, 3rd ed. New York: Random House. *2*, 233-346.

McLeod, J. M., Kosicki, G. M., & McLeod, D. M. (1994). The expanding boundaries of political communication effects. In: J. Bryant & D. Zillman (Eds.), Media Effects: Advances in Theory and Research. Hillsdale, NJ: Erlbaum. pp. 146-147.

McLuhan, M. (1994), Understanding media: The extensions of man. Cambridge, Massachusetts: MIT Press.

McLuhan, M., & Fiore, Q. (1967). The Medium is the message. NY: Bantam Books.

McNeill, W. H. (1976). Plagues and peoples. Garden City, NY: Anchor Press/Doubleday.

McQuail, D. (2000). Mass communication theory. Thousand Oaks, CA: Sage.

Medhi, G. K., Hazarika, N. C., Shah, B., & Mahanta, J. (2006). Study of health problems and nutritional status of tea garden population of Assam. *Indian Journal of Medical Sciences*, *60*(12), 496-505.

Medhi, G., Hazarika, N. C., & Mahanta, J. (2006a). Tobacco and alcohol use among the youth of the agricultural tea industry in Assam, India. *The Southeast Asian Journal of Tropical Medicine and Public Health*, *37*, 581-586.

Mendelsohn, H. (1973), Some reasons why information campaigns can succeed, *Public Opinion Quarterly*, *11*, 412-423.

Mengoni, M., Germani, M., & Mandorli, F. (2006). Surface reconstruction method for reverse engineering based on aesthetic knowledge. In: Proceedings of the International Symposiums on Tools and Methods of Competitive Engineering. Delft, The Netherlands: Delft University of Technology. pp. 251-262.

Merleau-Ponty, M. (1964). The primacy of perception. Evanston: North Western University Press.

Minutes of Evidence (1931). Evidence of Dr G.C. Ramsay, Royal commission on labour in India (Assam), Vol. 6. London, p. 10.

Mishra D. K., Upadhyay V., Sarma A. (2012). Unfolding crisis in Assam's tea plantations - employment and occupational mobility. Routledge.

Mishra, D. K., Upadhyay, V., Sarma, A. (2008). Crisis in the tea sector - a study of Assam tea gardens, *The Indian Economic Journal.* DOI: 10.1177/0019466220080304.

Mohan, B. and Sequeira, A. H. (2012). Customer-based brand equity in the fast moving consumer goods industry in india, *International Journal of Management 2*(5): 766–74.

Monö, R. (1997). Design for product understanding: The aesthetics of design from a semiotic approach (M. Knight, Trans.). Stockholm, Sweden: Liber. pp. 43-45.

Moreno, R. (2006). Learning in high-tech and multimedia environments. *Current Directions in Psychological Science*, 15, 63-67.

Morris, M. (1996). The Internet as a mass medium. *Journal of Computer Mediated Communication, 1* (4).

Nair, S. K., & White, S. A. (1994). Participatory message development: A conceptual framework. In: S. A. White, K. S. Nair, & J. Ascroft (Eds.), Participatory Communication: Working for Change and Development, pp. 345-358. New Delhi: Sage.

National Health Systems Resource Centre (2015). Study on contributing factors of IMR and MMR in tea gardens of Assam. Regional resource centre for north eastern states, Ministry of health and family welfare, Government of India.

Nightingale, V. (1993). What's ethnographic about ethnographic audience research. In: Graeme Turner (Ed.), Nation, Culture, Text: Australian Cultural and Media Studies. London and New York: Routledge., pp. 164-78.

Nisbett, R., & Ross, L. (1980). Human inferences: Strategies and shortcomings of human judgements. Englewood Cliffs, NJ: Prentice-Hall.

Nomani. A. M. (2008). The plantations labour act, 1951 and the Assam plantations labour rules, 1956. Guwahati: Assam Law House.

Norman, D. A. (1983). Some observations on mental models. In: D. Gentner & A. L. Stevens (Eds.), Mental Models. Mahwah, NJ: Erlbaum. pp. 299-324.

Nwanne, B.U. (2016). Journalism and new media in Nigeria: issues, challenges and prospects. *International Journal of Academic Research and Reflection, 4* (3), 86-92.

O'Sullivan, P.B., Carr, C.T. (2018). Mass personal communication: A model bridging the mass-interpersonal divide. *New Media and Society*, *20* (3), 1161-1180.

Office of Communications (OfCom) (2006). Media literacy audit: Report on media literacy amongst children. Accessed in October 2023 from www.ofcom.org.uk.

Oleksandrivna S. O. (2015): Approaches to new model of mass communication measurement. *European Science Review*. doi: 10.20534/ESR-15-3.4-70-73

Orgad, S. (2014). Media representation and the global imagination. John Wiley & Sons.

Orgad, S. (2017). Media Sociology- a reappraisal. S. Waisbord (Ed.). Guwahati: Rawat Publications. pp. 149.

Paivio, A. (1971). Imagery and verbal processes. New York: Holt, Rinehart & Winston.

Palmgreen, P., Wenner, L. A., & Rayburn, J. D. (1980). Relations between gratifications sought and obtained: A study of television news. *Communication Research, 7*(2), 161-192.

Panyang, R., Teli, A. B., Saikia, S. P. (2018): Prevalence of anemia among the women of childbearing age belonging to the tea garden community of Assam, India: a community-based study. *Journal of Family Medicine and Primary Care*, *7*(4), 734-738.

Pavlik, J. (1998): New media technology: Cultural and commercial perspectives, 2nd ed. Boston, MA: Allyn & Bacon.

Pay-Day on an Indian Tea Plantation (1910). Purveyors of the British breakfast table. The Graphic. p. 573.

Pechmann, C., & Stewart, D. W. (1988). A critical review of wearin and wearout. *Current Issues and Research in Advertising*, 285-330.

Perse, E. M., & Rubin, A. M. (1988). Audience activity and satisfaction with favorite television soap opera. *Journalism Quarterly, 65*, 368-375.

Peters, O., Rickes, M., Jöckel, S., von Criegern, C., & van Deursen, A. J. A. M. (2006). Explaining and analyzing audiences: A social cognitive approach to selectivity and media use. *Communications*, *31*(3), 279-308.

Petty, R. E., & Cacioppo, J. T. (1981). Attitudes and persuasion: Classic and contemporary approaches. Dubuque. IA: Brown.

Petty, R. E., & Cacioppo, J. T. (1984). Motivational factors in consumer response to advertisements. Human Motivation. NY: Allyn and Bacon. pp. 418-454.

Petty, R. E., & Cacioppo, J. T. (1986). Communication and persuasion: Central and peripheral routes to attitude change. NY: Springer-Verlag.

Petty, R. E., & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. In: S. Chaiken & Y. Trope (Eds.), Dual Process Theories in Social Psychology. NY: Guilford Press. pp. 41-72.

Phukan, U. (1984). The ex tea garden population in Assam. New Delhi: B.R. Publishing Corporation.

Potter, W. J. (1986). Perceived reality and the cultivation hypothesis. *Journal of Broadcasting & Electronic Media, 30*, 159-174.

PIB - Press Information Bureau (2012). Tea tribe community. Ministry of state for tribal affairs, in a written reply in the Lok Sabha.

Price, V., & Tewksbury, D. (1997). New values and public opinion: A theoretical account of media priming and framing. In: G. A. Barnett & F. J. Boster (Eds.), Progress in Communication Sciences: Advances in Persuasion, *13*, 173-212. Greenwich, CT: Ablex Publishing.

Proceedings of Assam Labour Enquiry Committee in the Recruiting and Labour Districts (1906). Calcutta: The superintendent of government printing press. p. 34.

Proceedings of the Chief Commissioner of Assam, Revenue and Agricultural Department, Govt. of India. (1884). pp. 3-12.

Provincial Gazetteer of Assam 1906 (1983). Delhi: Cultural Publishing House. p. 49

Radvansky,, G. A., Zwann, R. A., Federico, T., & Franklin, N. (1998). Retrieval from temporally organized situation models. *Journal of Experimental Psychology: Learning, Memory and Cognition, 24*, 1224-1237.

Rasaily, R. (2016). Women's labour in the tea sector: Changing trajectories and emerging challenges. In: Globalisation, Development and Plantation Labour in India. Routledge India. pp. 51-81.

Reeves, A. M., Chaffee, S., & Tims, A. (1982). Social cognition and mass communication research. In: M. E. Roloff & C. R. Berger (Eds.), Social Cognition and Mass Communication, pp. 287-326. Newbury Park, CA: Sage.

Report of the Commissioners on the Tea Cultivation of Assam (1868).

Report on Labour Immigration into Assam (1891). Shillong: The Assam Secretariat Press. p. 13

Report on Labour Immigration into Assam for the year 1877 (1878). Shillong: Assam Secretariat Press. p. 18

Report on Labour Immigration into Assam for the year 1878 (1879). Shillong: Assam Secretariat Press. pp. 10-15

Report on Labour Immigration into Assam for the year 1882 (1883). Shillong: Assam Secretariat Press. p. 27

Report on Labour Immigration into Assam for the year 1883 (1884). Shillong: The Assam Secretariat Press. p. 33

Report on Labour Immigration into Assam for the year 1889 (1890), Shillong: The Assam Secretariat Press, p. 28

Report on Labour Immigration into Assam for the year 1893 (1894). Shillong: The Assam Secretariat Press. p. 48

Rice, R., & Atkin, C. (Eds.) (1989). Public communication campaigns, 2nd ed. London: Sage. p. 10.

Rickheit, G., & Sichelschmidt, L. (1999). Mental models: Some answers, some questions, some suggestions. In G. Richeit and C. Habel (Eds.), Mental Models in Discourse Processing and Reasoning. NY: Elsevier. pp. 9-40.

Rimal, R. N., & Adkins, A. D. (2003). Using computers to narrowcast health messages: The role of audience segmentation, targeting, and tailoring in health promotion

In: T. L Thompson, A. M. Dorsey, K. I. Miller, & R. Parrot (Eds.), Handbook of Health Communication. Mahwah, NJ: Erlbaum. pp. 497-553.

Ritterband, L. M., Andersson, G., Christensen, H. M., Carlbring, P., & Cuijpers, P. (2006). Directions for the international society for research on internet interventions (ISRII). *Journal of Medical Internet Research*, *8*(3), 576.

Rodriguez, C. (2001). Fissures in the mediascape: An international study of citizens' media. Creeskill, NJ: Hampton Press.

Rogers, E. M., & Storey, D. (1987). Communication campaigns. In C. Berger & S. Chaffee (Eds.), Handbook of Communication Science. Newbury Park, CA: Sage. pp. 817-846.

Rosario, F. Z. (1971): The leader in family planning and the two-step flow model. *Journalism Quarterly*, *48*, 288-297

Rosengren, K. E., & Windahl, S. (1972). Mass media consumption as a functional alternative. In: D. McQuail (Ed.), Sociology of Mass Communications. Middlesex, England: Penguin. pp. 166-194.

Roskos-Ewoldsen, D. R. (1997). Attitude accessibility and persuasion: Review and a transactive model, annals of the international communication association, *20*(1), 185-225.

Roy, S.K. (2005). Tribes Education and Gender Question. New Delhi: Northern Book Centre. pp.165.

Rubin, A. M., & Rubin, R. B. (1989). Social and psychological antecedents of VCR use. In: M. R. Levy (Ed.), The VCR Age: Home Video and Mass Communication. Newbury. pp. 92-111.

Rubin, A. M., & Windahl, S. (1986). The uses and dependency model of mass communication. *Critical Studies in Mass Communication*, *3*, 184-199.

Rubin, A. M., Perse, E. M., & Powell, R. A. (1985). Loneliness, parasocial television news viewing. *Human Communication Research*, *12*, 155-180.

Rubin, R. B., & McHugh, M. P (1987). Development of parasocial interaction relationships. *Journal of Broadcasting & Electronic Media*, *31*, 279-292.

Sachdev, S. (2018). A matter of life and death: Surviving childbirth on Assam's tea plantations. *Nazdeek*.

Saikia, S., Misra, S., Misra, B. (2014): Tea garden workers and their living conditions: A study on Sarusarai tea garden of Jorhat district of Assam, XV Annual international seminar on economy, enterprise and employment. pp. 509-517.

Salisbury, L. D. P. (2001). Automatic visual display design and creation. University of Washington.

Salmon, C., & Atkin, C. (2003). Using media campaigns for health promotion. In: T. L. Thompson A. M. Dorsey, K. L. Miller, & R. Parrott (Eds.), Handbook of health communication. pp. 449-472.

Sanders, M. S. And McCormick, E. J. (1993). Human Factors in Engineering and Design, 7th edn. NY: McGraw-Hill.

Sardi, H. A.., & Flammia, M. (2011). Intercultural communication: A new approach to international relations and global challenges. NY: Continuum.

Sarkar, K. (2016). Return to labour and inclusive growth in the context of Indian tea plantations: Recent happenings in Kerala and West Bengal. Paper presented at International Conference on Public Policy & Management.

Sarma, A. (2015). Social security as a productive factor for informal workers in tea gardens of Brahmaputra valley in Assam, Sikkim University, pp. 26-69.

Sawyer, A. G. (1981). Repetition, cognitive responses and persuasion. In: R. E. Petty, T. M. Ostrom, & T. C. Brock (Eds.), Cognitive responses in persuasion. Hillsdale, NJ: Erlbaum. pp. 237-261.

Scherer, K. R. (2001). Appraisal considered as a process of multilevel sequential checking. In: K. R. Scherer, A. Schorr, & T. Johnstone (Eds.). Appraisal processes in emotion: Theory, methods research. NY: Oxford University Press. pp. 92-120.

Schifferstein, H. N. J., & Hekkert, P. (Eds.) (2008). Product experience. San Diego, CA: Elsevier.

Schramm, W. L. (1977). The process and effects of mass communication. 4th edn. University of Illinois Press.

Sellers, C. (1999). Thoreau's Body: Towards an embodied environmental history. *Environmental History*, *4*(4), 486-514.

Sengupta, S. (2009). The tea labourers of north east india - An anthropo-historical perspective. New Delhi: Mittal Publications.

Serov N. V. (1997). Jestetikacveta. Metodologijahromatizma (Aesthetics of Color. Methodology of Chromaticity). Sankt-Peterburg.: OB FPB-LISS (Saint-Petersburg.: OB FPB-LISS). pp. 13.

Shannon, C. E. (1948). A mathematical theory of communication. *The Bell System Technical Journal*, *27*, 379-423.

Sharma, C. K. (2012). The immigration issue in Assam and conflicts around it. *Asian Ethnicity*, *13*(3), 287-309.

Sharma, J. (2009). 'Lazy' natives, coolie worker, and the Assam tea industry. *Modern Asian Studies*. *43*(6), 1287–1324.

Sharma, J. (2011). Empire's garden: Assam and the making of India. Duke University Press.

Shedroff, N. (1999). Information interaction design: A unified field theory of design. In R. E. Jacobson (Ed.), Information Design. Cambridge, MA: MIT Press. p. 271.

Shimp, T. A. (1990), Promotion management and marketing communications, 2nd edn. Hinsdale, IL: Drydn Press.

Shlomowitz, R., & Brennan, L. (1990). Mortality and migrant labour in Assam, 1865-1921. *The Indian Economic & Social History Review*, *27*(1), 85-110.

Shrum, L. J. (2007). Cultivation and social cognition: Theories and methods. Mahwah, NJ: Erlbaum. pp. 245-272.

Shrum, L. J., Wyer, R. S., & O'Guinn, T. C. (1998). The effects of television consumption on social perceptions: The use of priming procedures to investigate psychological processes. *Journal of Consumer Research*, *24*, 447-458.

Silver, N. C. & Wogalter, M. S. (1991). Strength and understanding of signal words by elementary and middle school students. In: Proceedings of the Human Factors Society, 35th Annual Meeting. Santa Monica, CA: Human Factors Society.

Silverstone, R. (1994). Television and everybody life. London: Routledge.

Singh, N. K. (2001). Role of women workers in tea industry of north-east-India, New Delhi: Classical Publishing Company, p.42.

Singh, S. N., Narain, A., & Kumar, P. (2006). Socio-economic and political problems of tea garden workers: A study of Assam. New Delhi: Mittal Publications.

Sobers, S. (2005). Media literacy in community contexts, and sharing experience with the mainstream. In: Implementing media literacy: Empowerment, participation and responsibility. London: Westminster Media Forum Seminar Series. pp. 84-86.

Sotirovic, M., & McLeod, J. M. (2001). Values, communication behavior, and political participation. *Political Communication*, *18*, 273-300.

Srull, T. K., & Wyer, R. S. (1979). The role of category accessibility in the interpretation about persons: Some determinants and implications. *Journal of Personality and Social Psychology*, *37*, 1660-1672.

Stafford, T. F., Stafford, M. R. & Schkade, L. L. (2004). Determining uses and gratifications for the Internet. *Decision Sciences*, *35* (2), 259- 288.

Strong, E. K. (1925). The psychology of selling and advertising. NY: McGraw-Hill.

St. Amant, K. (2005). A prototype theory approach to international website analysis and design. *Technical Communication Quarterly*, *14*, 73-91.

Sun, H. (2012). Cross-cultural technology design: Crafting culturesensitive technology for local users. NY: Oxford University Press.

Swanson, D. L. (1979). Political communication research and the uses and gratifications model: A critique. *Communication Research*, *6*, 37-53.

Talukdar, S. (2007). Dalits in news. National campaign on dalit human rights.

Tan, A., Fujioka, Y., & Lucht, N. (1997). Native American stereotypes, TV portrayals, and personal contact. *Journalism & Mass Communication Quarterly*, *74*, 265-284.

Tanti, S. K. (2002). Chah janagosthir bhasa samporka. *Amar Asom*, 4 March 2002.

Tasa, D. (2013). Sah mazdoor samajat samajik shiksha, Assam Sahitya Sabha.

Tea Emissary (2022). How was tea discovered in Assam. TEAORB.

Tea industry in Bengal (1873). Bengal Secretariat Press. p. 115.

Tebeaux, E. (1999). Designing written business communication along the shifting cultural continuum: The new face of Mexico. *Journal of Business and Technical Communication*, *13*, 49-85.

The Assam Tribune (2018). Wage compensation scheme for pregnant women in TES launched, 2 October 2018.

Thorson, E. (1990). Consumer processing of advertising. In: J. H. Leigh & C. Martin, Jr. (Eds.), Current Issues and Research in Advertising, *12*, 197-230. Ann Arbor: University of Michigan.

Thurfjell, A. (2017). Developing colour systems for news media, Design Newspaper, Copenhagen.

Tinker, H. (1974). A new system of slavery: The export of Indian labour overseas 1830-1920. London.

TISS (2019). Decent work for tea plantation workers in Assam: Constraints, challenges and prospects.

Tolley, B. S., & Bogart, L. (1994). Attention, altitude and affect in response to advertising. Hillsdale, NJ: Erlbaum. pp. 69-78.

Tufano, J. T., & Karras, B. T. (2005). Mobile health interventions for obesity: A timely opportunity to leverage convergence trends. *Journal of Medical Internet Research*, 7(5), 58.

Turnbull. A. T. & Baird, R.N. (1968) The graphics of communication: typography, layout, design, 4th edn. NY: Holt, Rinehart and Winston.

Twine, F. W. (2006). Visual ethnography and racial theory: family photographs as archives of interracial intimacies. *Ethnic and Racial Studies, 29,* 487–511.

Ulijn, J. M. 1996: Translating the culture of technical documents: Some experimental evidence. In: D. C. Andrews (Ed.), International dimensions of technical communication. Arlington, VA: Society for Technical Communication. pp.69-86.

UNESCO (2003). Different approaches for achieving EFA: Indian experience.

UKTIA (2023). United Kingdom Tea & Infusions Association Ltd., c/o Food & Drink Federation, London, WC1A 2SL, accessed in September 2023 from https://www.tea.co.uk

van Dijk, T. A., & Kintsch, W. (1983). Strategies of discourse comprehension. NY: Academic Press.

van Reijswoud, V. & de Jager, A. (2011). The role of appropriate ICT in bridging the digital divide: Theoretical considerations and illustrating cases. In K. St. Amant & B. A. Olaniran (Eds.), *Globalization and the Digital Divide*. Amherst, NY: Cambria Press. pp. 59–87.

Varma, N. (2016). Coolies of capitalism: Assam tea and the making of coolie worker. Berlin/Boston : De Gruyter.

Varner, I. & Beamer, L. (2010). Intercultural communication in the global workplace, 5th edn. NY: McGraw Hill.

Vir, S. C. (2008). Addressing Child Malnutrition in Tea Gardens of Dibrugarh District, Assam. UNICEF.

Virzi, R. A. (1992). Refining the test phase of usability evaluation: How many subjects is enough? *Human Factors*, *34*, 457-468.

Vivian J. (2006): The media of mass communication, 8th edn. Boston, MA: Pearson.

Vorderer, P. (1993). Audience involvement and program loyalty. *Poetics*, 22.

W. Fernandes, B. Sanjay, and G. Bharali (Eds.). (2003). Primary education of plantation labourers' children in Assam. Guwahati: North East Resource Centre.

Warren, W.K. (1975). Tea tales of Assam: Recollections of the early days in "tea" as concerned the warren family. p.8.

Watt, J. H., & Van den Berg, S. A. (1978). Time series analysis of alternative media effects theories. In: B. D. Ruben (Ed.), Communication yearbook, Vol. 2, pp. 215-224. New Brunswick, NJ: Transaction Books.

Weatherstone, J. (1986). The Pioneers 1825-1900: The early British tea and coffee planters and their way of life. p. 69.

Westley, B.H., MacLean, M.S. (1957). A conceptual model of communications research. *Journalism Quarterly*. *34*(1), 31-38.

Williams, B. A., & Carpini, M. X. D. (2011). After broadcast news: Media regimes, democracy, and the new information environment. Cambridge University Press.

Williams, R. (1973). The city and the country. NY: Oxford University Press.

Williams, S. L. (1992). Perceived self-efficacy and phobic disability. In: R. Swarzer (Ed.), Self-efficacy: Thought Control of Action. Washington, D.C.: Hemisphere. pp. 149-176.

Willson, K. C., & Clifford, M. N. (1992). Tea: cultivation to consumption. London: Chapman and Hall.

Windahl, S. (1981). Uses and gratifications at the crossroads. Mass Communication Review Yearbook 2, p.176.

Windahl, S., Hojerback, I., & Hedinsson, E. (1986). Adolescents without television: A study in media deprivation. *Journal of Broadcasting & Electronic Media, 30*, 47-63.

Winn, W. (1993). Perception principles. In: Fleming, M., Levie, W.H. (Eds). Instructional Message Design, Principles from the Behavioral and Cognitive Sciences. Englewood Cliffs, NJ: Educational Technology Publications. pp. 55-126.

Wober, M., & Gunter, B. (1988). Television and social control. Aldershot, England: Avebury.

Wogalter, M, S., Godfrey, S. S., Fontenelle, G. A., Desaulniers, D. R., Rothstein, P. R. & Laughery, K. R. (1987). Effectiveness of warnings. *Human Factors*, 29.

Wogalter, M. S., Magurno, A. B., Carter, A. W., Swindell, J. A., Vigilante, W. J., and Daurity, J. G. (1995). Hazard associations of warning header components. *Proc. Hum. Factors Ergo. Soc. Annu. Meet. 39*(15), 979-983.

Woolever, K. R. (2001). Doing global business in the information age: Rhetorical contrasts in the business and technical professions. In: C. G. Panetta (Ed.), Contrastive Rhetoric Revisited and Redefined. Mahwah, NJ: Lawrence Erlbaum Associates. pp. 47-64.

Wright, P. (1998). Printed instructions: Can research make a difference? In Visual information for everyday use. CRC Press. pp. 79-100.

Wyer, R. S. (1980). The acquisition and use of social knowledge: Basic postulates and representative research. *Personality and Social Psychology Bulletin, 6,* 558-573.

Wyer, R. S., & Srull, T. K. (1980). The processing of social stimulus information: A conceptual integration. In R. Hastie, E. B. Ebbessen, T. M. Ostrom, R. S. Wyer, D. L. Hamilton, & D. E. Carlston (Eds.), Person memory: The cognitive basis of social perception, pp. 227-300. Hillsdale, NJ: Erlbaum.

Wyer, R. S.. and Srull, T. K. (1989). Memory and cognition in its social context. Hillsdale, NJ: Erlbaum.

Young, S. L. (1991). Increasing the noticeability of warnings: Eeffects of pictorial, colour, signal icon and border. In: Proceedings of the Human Factors Society 35th Annual Meeting. Santa Monica, CA: Human Factors Society.

Yu, L, Chan, C., & Ireland, C. (2007). China's new culture of cool: Understanding the world's fastest-growing market. Berkeley, CA: New Riders.

Yunker, J. (2003). Beyond borders: Web globalization strategies. Berkley, CA: New Riders.

Zillmann, D. (1980). Anatomy of suspense. In: P.H. Tannenbaum (Ed.), The entertainment functions of television. Hillsdale, NJ: Erlbaum.

Zillmann, D. (2015). Mood management: Using entertainment to full advantage. In: L. Donobew, H. E. Sypher & ET. Higgins (Eds.), Communication, Social Cognition, and Affect. Psychology Press. pp. 147-171.

Zillmann, D., & Bryant, J. (1994). Entertainment as media effect. In: J. Bryant & D. Zillmann (Eds.), Media Effects: Advances in Theory and Research. Hillsdale, NJ: Erlbaum. pp. 437-462.

Zwaga, H., Boersema, T., & Hoonhout, H. (Eds.). (2003). Visual information for everyday use: Design and research perspectives.

Zwann, R. A., & Radvansky, G. A. (1998). Situation models in language comprehension and memory. *Psychological Bulletin, 123,* 162-185.

Appendices

1. Primary Survey Tool

SURVEY TOOL

One form is filled up against each respondent.

This is the English version of the Survey tool.

The questions are explained and responses are taken in the Sadri dialect.

Respondent Details	
Gender	☐ Female
	☐ Male
Age [in range]	☐ Up to 18 years
	☐ 19 to 40 years
	☐ Above 40 years
Education [in range]	☐ No formal Education
	☐ Class I to V
	☐ Class VI to X
	☐ Above X

1. When did the you see a poster or banner on public awareness/ scheme?

- ☐ Within 3 months
- ☐ 3 to 6 months
- ☐ 6 to 12 months
- ☐ Not in a year or do not remember

2. (If poster/banner seen) What were the poster/banners about? (Multiple options allowed)

- ☐ Education
- ☐ Health or nutrition
- ☐ Cleanliness or sanitation
- ☐ Women or children
- ☐ Something else or do not know

3. (If poster/banner seen) Was there any picture or photo on the poster or banners?

- ☐ No
- ☐ Yes

4. (If poster/banner seen) Did you read the text of the poster or banners?

- ☐ No
- ☐ Yes

5. (If poster/banner seen) What mostly attracts you towards the posters/banners? (Multiple options allowed)

- ☐ Image
- ☐ Colour
- ☐ Text or slogan

6. (If poster/banner seen) Poster/banners are put up in which language? (Multiple options allowed)

- ☐ English
- ☐ Assamese
- ☐ Tea tribal dialect or other or do not remember

7. Do you listen to special programmes on tea workers on the radio?

- ☐ Yes
- ☐ Listen to the radio but not programme on tea workers
- ☐ Do not listen to the radio

8. Do you watch government ads or public awareness announcements on TV?

- ☐ Yes, understand the ads
- ☐ Watch TV, not seen such ads
- ☐ Watch ads, do not understand much
- ☐ No TV or do not watch

9. Do you understand the announcements made through loudspeakers?

- ☐ Yes
- ☐ No
- ☐ No such announcement was made

10. During movie shows in the tea estate, have you seen government advertisements or public awareness announcements?

- ☐ No
- ☐ Yes, understand
- ☐ Yes, do not understand much
- ☐ Do not watch movies or do not know

11. Have you seen any play or theatre in or around the tea estate area?

- ☐ No
- ☐ Yes

12. Do you watch videos on the mobile phone?

- ☐ No
- ☐ Yes

13. (If videos watched) Do you come across government ads or public awareness messages on the phone?

- ☐ Yes, understand
- ☐ Yes, do not understand
- ☐ No or do not remember

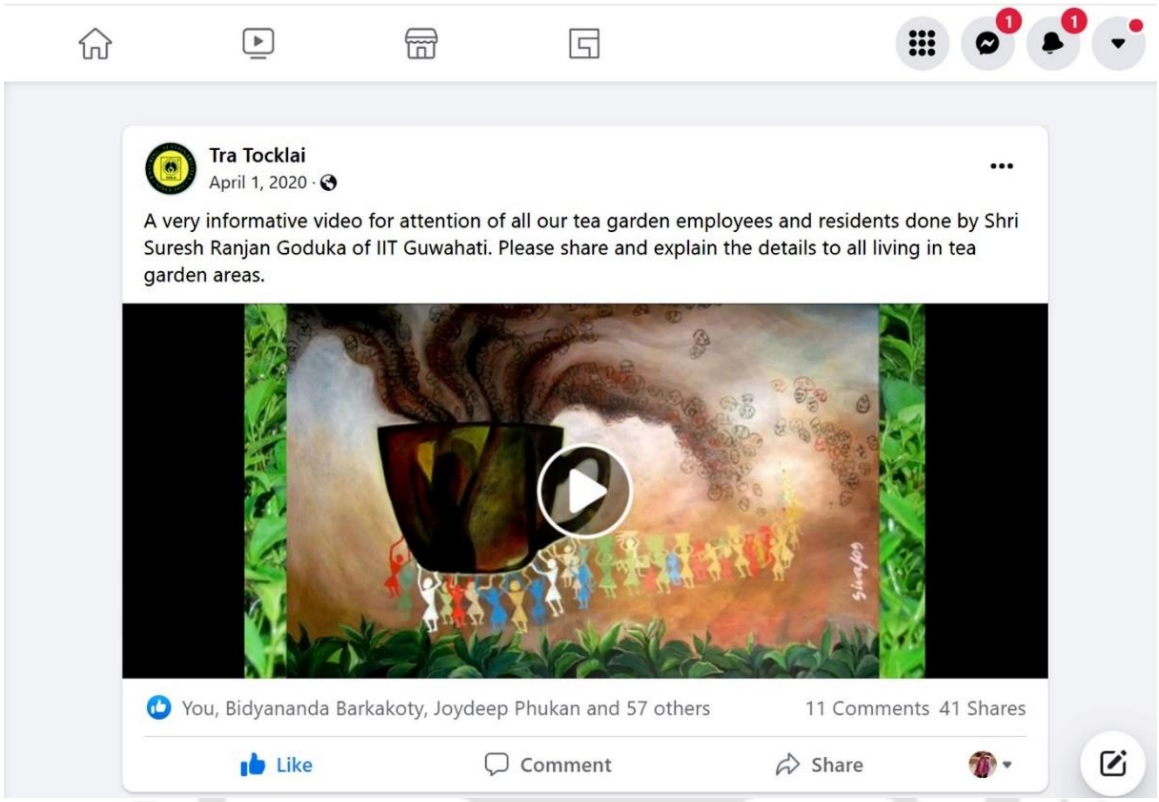
14. Have you seen these facilities around the tea estate? (Multiple options allowed)

- ☐ Auditorium
- ☐ LED projector
- ☐ Public library
- ☐ None of these

15. How do you know about government schemes etc.? (Multiple options allowed)

- ☐ Poster or banner
- ☐ Newspaper
- ☐ TV
- ☐ Mobile phone
- ☐ Loudspeaker
- ☐ Friends or others
- ☐ Local market

2. Tea Research Association Post



3. Internet and Mobile Association of India Certificate

IAMAI
Internet And Mobile Association Of India

IAMAI Design Challenge 2020

Certificate of Participation

is awarded to

Suresh Goduka

For his active participation in '**IAMAI Design Challenge 2020**' held virtually to solve for the complex social issues arising due to Pandemics. Suresh was selected amongst the top 20 participants for the final round and his idea was appreciated by all the jury involved.

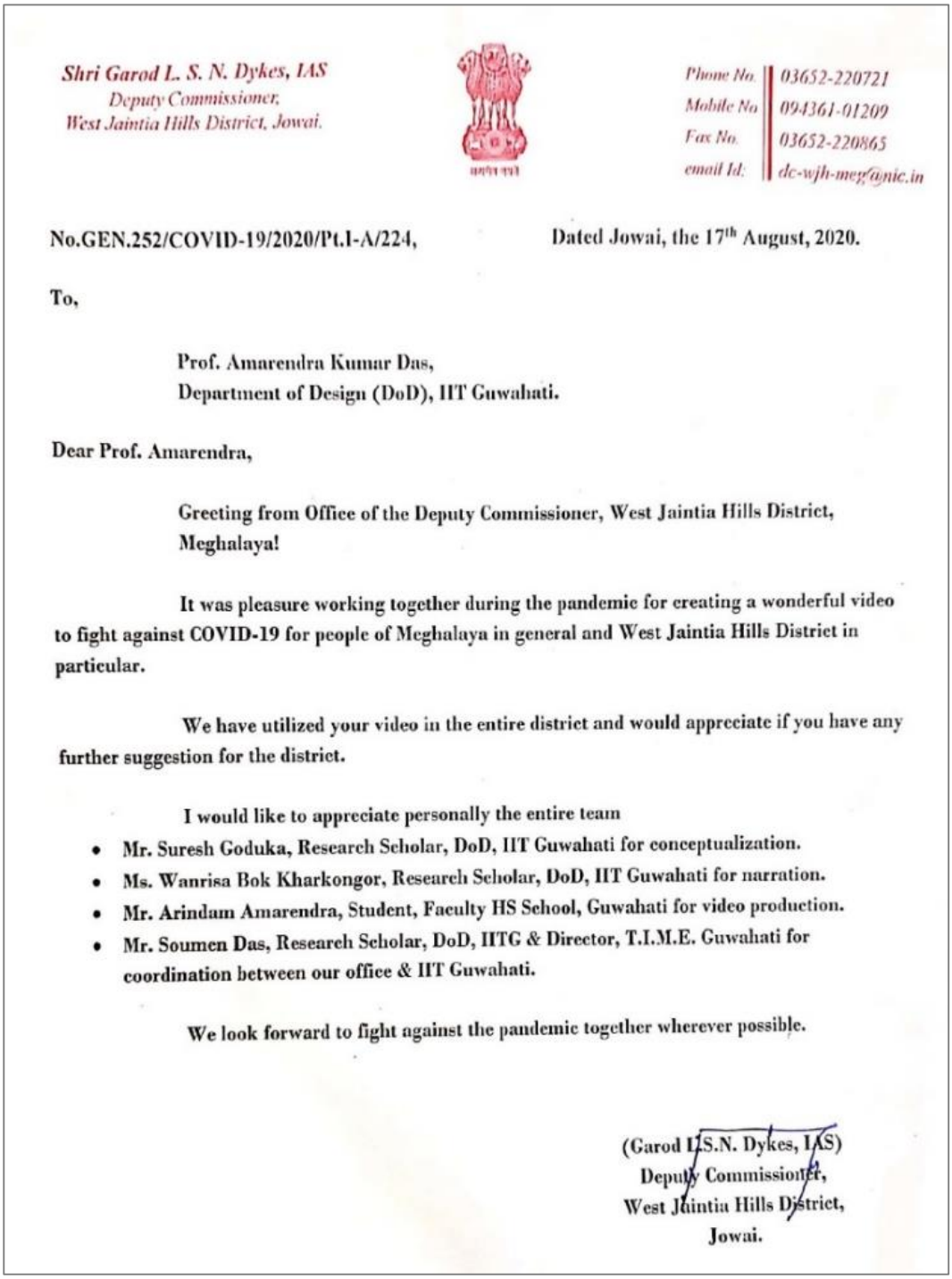
The challenge was organized by **Internet and Mobile Association of India** (IAMAI), in association with **Facebook, UNICEF and Dabung Girl.**

We wish him a successful future.

4th August 2020
New Delhi

Col. Jitender Minhas (retd.)
CEO, IAMAI Startup Foundation

4. Letter from West Jaintia Hills administration



Shri Garod L. S. N. Dykes, IAS
Deputy Commissioner,
West Jaintia Hills District, Jowai.

Phone No. 03652-220721
Mobile No 094361-01209
Fax No. 03652-220865
email Id: dc-wjh-meg@nic.in

No.GEN.252/COVID-19/2020/Pt.I-A/224, Dated Jowai, the 17th August, 2020.

To,

Prof. Amarendra Kumar Das,
Department of Design (DoD), IIT Guwahati.

Dear Prof. Amarendra,

Greeting from Office of the Deputy Commissioner, West Jaintia Hills District, Meghalaya!

It was pleasure working together during the pandemic for creating a wonderful video to fight against COVID-19 for people of Meghalaya in general and West Jaintia Hills District in particular.

We have utilized your video in the entire district and would appreciate if you have any further suggestion for the district.

I would like to appreciate personally the entire team

- Mr. Suresh Goduka, Research Scholar, DoD, IIT Guwahati for conceptualization.
- Ms. Wanrisa Bok Kharkongor, Research Scholar, DoD, IIT Guwahati for narration.
- Mr. Arindam Amarendra, Student, Faculty HS School, Guwahati for video production.
- Mr. Soumen Das, Research Scholar, DoD, IITG & Director, T.I.M.E. Guwahati for coordination between our office & IIT Guwahati.

We look forward to fight against the pandemic together wherever possible.

(Garod L.S.N. Dykes, IAS)
Deputy Commissioner,
West Jaintia Hills District,
Jowai.

This is purely for academic purposes (by Suresh Goduka, IIT Guwahati)

How do you rate the following observation/suggestion for improving the effectiveness of mass media tools among Assam tea plantation workers?	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly Agree
Before designing/disseminating a message, it is essential to identify: (a) intended users, (b) user context, (c) points of interaction between the media tool and the users, (d) message design elements.	◯	◯	◯	◯	◯
The design strategy has to include studying patterns, preferences, and socio-cultural conditioning of the media users.	◯	◯	◯	◯	◯
The same message, if presented concurrently as visual, audio and video, can produce maximum effect, and also help individuals with vision or hearing impairments.	◯	◯	◯	◯	◯
A single locally identifiable image can carry the visual message.	◯	◯	◯	◯	◯
Minimum visual components. Only to generate significance, usefulness, and emotional resonance for the intended users.	◯	◯	◯	◯	◯
No text. This will help users with limited language skills, including those with less or no education.	◯	◯	◯	◯	◯
The setup should represent the target users' social-cultural and familiar experiences.	◯	◯	◯	◯	◯
The visuals are to present characters, appearances, situations and settings that are relatable to the users.	◯	◯	◯	◯	◯
Message designers and media users should share a common minimum visual vocabulary.	◯	◯	◯	◯	◯

The poster/banner design should be highly visible to seize the fleeting attention of the passersby.	◯	◯	◯	◯	◯
Messages are to be accessible for those who struggle with reading printed text, to be recognized from a distance under various viewing conditions such as brief exposure, low light, or glare.	◯	◯	◯	◯	◯
The language in the audio message to be the community's language.	◯	◯	◯	◯	◯
The narration is to be informal and conversational.	◯	◯	◯	◯	◯
The vocabulary and syntax to match the community capacity.	◯	◯	◯	◯	◯
The message is to be precise, specifying the threat, clear instructions on preventive measures, and consequences of non-compliance.	◯	◯	◯	◯	◯
The visual language needs to reflect the community context, such as, but not limited to, costume, body complexion, facial expressions, body orientation, house, open areas, community places, and others.	◯	◯	◯	◯	◯
Colour properties to match the community environment.	◯	◯	◯	◯	◯
Contextual colour palette to be used. Red, e.g., may not stop/scare some community, rather denote auspicious. It may also not be distinct to those with colour blindness.	◯	◯	◯	◯	◯
To avoid confusion, flashing or blinking not to be faster than twice per second.	◯	◯	◯	◯	◯
Auto-scrolling graphics and animated effects are to be avoided as they could be challenging to perceive for many.	◯	◯	◯	◯	◯
The message design needs to utilise the experiential knowledge of the media users as if they are physically present within the design.	◯	◯	◯	◯	◯

Name: **Organisation:**

6. Media tools (Hyperlinked)

i. A campaign video disseminated by the government on COVID-19 precautions:
Corona Awareness-Video-1 by govt_Hindi.mp4

ii. Another campaign video disseminated by the government on COVID-19 precautions
Corona Awareness-Video-2 by govt_Assamese.mp4

iii. Alternative projected video on COVID-19 precautions:
Video_CoronaLockdown_TeaLabourers_Awareness_Designed by SureshGoduka_IITG.mp4.mp4

iv. A visual message disseminated by the government on Japanese encephalitis
Govt visual message on JE.jpg

v. Alternative projected visual message on Japanese encephalitis
Projected visual message on JE.jpg